



On the B. & A. near Weston, Mass.

Railway Age

Vol. 83 December 10, 1927 No. 24



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LOOKING BACKWARD

NEW BOOKS

ODDS AND ENDS OF RAILROADING.....

NEWS OF THE WEEK.....

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Railway Age

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Rail Motor Cars Increasingly Popular

LAST week the Chicago, Burlington & Quincy placed an order for 25 rail motor cars of the gas-electric type which, together with an order for one additional car still pending as this editorial is written, constitutes the largest single order ever placed for rail motor equipment for service on American railroads. In the same week, the Baltimore & Ohio ordered 11 gas-electric rail cars and recently the Chicago & North Western placed orders for 11 cars of the same type. While data regarding all of the rail motor cars to be ordered in 1927 are not yet available, they will unquestionably exceed the 170 ordered in 1926 by an appreciable figure. It is interesting to note that 171 of these cars were ordered in 1925; 112 in 1924; 93 in 1923; and only 50 in 1922. In other words, exclusive of the early highly experimental period, modern rail motor equipment has reached its present state of development in a period of practically 7 years. The significance of the individual orders previously mentioned, together with similar orders on other roads, is inescapable. They indicate plainly the increasing popularity of rail motor cars, particularly of the gas-electric type. They point to the conclusion that the day of the small steam locomotive, as familiarly known in branch and light main line railroad service, has passed, this unit, which was so effective in its time, being displaced because of relatively high labor, fuel and terminal costs of operation as compared to the power rail car.

Early Start For Motor Transport Division

THE new Motor Transport Division of the American Railway Association is losing no time in starting to work. Almost immediately after the member roads of the association had approved the organization of the new division, the president of the American Railway Association and the president of the Railroad Motor Transport Conference met and appointed an organization committee, consisting of the members of the executive committee of the Motor Transport Conference, and called the first meeting of the Motor Transport Division for Chicago some time in January. A secretary of the new division was also appointed. The first meeting of the Motor Transport Division is expected to be largely an organization meeting at which a permanent organization will be elected and the future work of the division outlined. This quick action in reviving the work of the Railroad Motor Transport Conference, which has been inactive for a year, and in getting the Motor Transport Division on its feet without delay is

commendable. We are in the midst of a major trend in motor transportation. Out of the mass of "wildcat" motor coach and motor truck lines are merging a few large companies well organized, well financed and well operated, which are absorbing the small individual lines and converting them into extensive systems. Furthermore, the legislative situation, with respect to motor transportation, is prominently in the limelight. Both of these developments are forming new problems for the railways to face. The Motor Transport Division should assume a position of leadership in the working out of these problems. The sooner it is organized and active, the better.

Air Transportation

THE present state of development of air transportation in the United States is such that those engaged in providing other forms of transportation can well afford to give it careful consideration. At the present time, the air transport lines in this country are operating as adjuncts to the railways. Great strides in the spread of air transportation and in its common use are expected in the future. It may become an important supplement to railway transportation or it may become a competitor of the railways, the former prospect appearing at this time more likely of fulfillment. Whether as a complement or as a competitor, however, air transportation will be at close quarters with railway transportation. For this reason railway officers will find it of interest and advantage to keep in current touch with what is going on in this newest arm of transportation. To meet this anticipated demand for information about the development of air transportation, which has been expressed by railway officers on several occasions, the *Railway Age* will publish from time to time articles dealing with this subject. The first of these articles, entitled "Air Transport in Rapid Spread," was published last week. Subsequent articles will touch in greater detail upon the operations of the individual air transport companies, and upon other related subjects.

The "Peak Movement" of 1927

THE annual "peak movement" of traffic is now past and it is an interesting fact that the traffic "peak" of 1927 showed a smaller increase over the minimum traffic of the year than has been shown in any previous year since the war. The smallest volume of freight business usually is handled in the first four weeks of the year, although this is not always the case. In three of the last nine years the movement of traffic reached its peak in the four weeks ending with the first week in October, while in the other six it reached its peak in

the four weeks ending with the first week in November. The difference between the minimum and maximum car loadings for four consecutive weeks in 1920 was only 22 per cent and in 1925 only 24 per cent, while in 1926 it was 37 per cent and in 1919 and 1922 in excess of 40 per cent. Car loadings in the first four weeks of 1927 were 3,784,401, which was the minimum for the year, and in the four weeks ending October 8 they were 4,472,041, this maximum for the year being only 18 per cent greater than the year's minimum. Car loadings have been, as a matter of fact, more nearly uniform throughout the year 1927 than in any previous year since they have been reported. In 1926, for example, in the summer and fall months, they ranged from 16 to 37 per cent higher than in the first four weeks of the year, while in the summer and fall months of 1927 they have ranged only 3 to 18 per cent higher than in the first four weeks of the year. The failure of traffic to rise to its usual peak in the fall of 1927 is, of course, one of the principal explanations of the large surpluses of equipment that the railways had throughout September, October and November.

Cost Accounting

SHOULD the railroads be required to classify their operating expenses on a cost accounting basis? Is it practicable to devise a classification that will exhibit actual costs pertaining to the various services performed by the railroads? How do the cost problems of the railroads compare with those of the manufacturing industries which have developed practical methods of costing their products? What practical methods might be employed by a railroad to develop reasonably reliable data on costs of service? Why, indeed, should the railroads be singled out for pioneer work in formal public utility cost accounting? These questions are suggested as being more or less typical of those which are being urged with increasing frequency and insistence at this time with reference to the proposed revision of the accounting classifications of the railroads. After discussing a revision of its 1914 accounting classifications for some five or six years, the Interstate Commerce Commission has now brought the matter to the hearings stage in a proceeding which it has designated as ex parte 91. The first person to appear in the accounting proceeding presented an elaborate cost accounting plan. Having thus received such a measure of official recognition, adequate discussion of it becomes highly desirable. Readers of the *Railway Age* will find opportunity to have their thoughts on the matter clarified in the article written by an authority on cost accounting appearing on another page of the present issue. Andrew Sangster, a consulting accountant, brings to his analysis of the possibilities—and difficulties—of applying cost accounting to railroad transportation extensive experience in the study and application of cost accounting systems to manufacturing enterprises. He is familiar with the requirements of the public interest, which looms so important in this instance, as a result of extended experience with public utilities and of many appearances in rate and valuation cases before regulatory commissions. Outside of its merit as an expert and understanding treatment of the subject the article will have the great value of finally bringing into the open for purposes of practical discussion a question that in the past has been, on the whole, rather avoided by railroad accounting officers and others in the industry in spite of its advocacy, theoretical or otherwise, by persons not in the employ of the railroads.

More Timber to Be Treated

THE railways have long been recognized as the pioneers in the development of the science of timber preservation. It has been perfected in the treatment of cross ties which long constituted almost the sole class of timber treated and still comprises more than 65 per cent of all wood so protected. Yet, cross ties constitute only about 12 per cent of the annual timber consumption of the country and only about half of that portion used by the railways. While it is surprising that with the many evidences of the increase in life afforded by treatment and with the knowledge that our forest resources are limited, more of the timber used today is not protected against decay, it is still more surprising that the railways themselves, with their intimate first hand knowledge of what timber preservation will do, continue to use so much wood untreated.

Take bridge timber for example. The requirements are large. It is employed by the same department that has gone so far in the use of treated cross ties. Yet, on the majority of the roads the larger part of the timber used in bridges is still untreated. This is due in large part to the long established practice of framing the timbers in the field and to the belief that this practice is an outgrowth of necessity, whereas it is, in fact, a relic of the days of the "carpenter." Yet, on those roads which have really given this subject serious consideration, it has been possible to frame timber in advance of treatment with such accuracy that the amount of cutting of the protected surface is so small as to be negligible. The same condition prevails with the treatment of car lumber. In spite of the recognized ability of treatment to increase the life of timber and the further established fact that the failure of much timber in car service can be traced directly or indirectly to the weakening defect of decay, the treatment of this timber has made relatively little progress and millions of feet of wood are still going into cars untreated.

The railways have already gone a long way in reducing their requirements for timber by increasing this life through treatment and they are still making progress in this direction. There is still a long road ahead of them, however,—a road which affords economies as large as those already effected.

Obsolete Signaling

THE improvement in equipment and in methods of locating signals to meet the requirements of modern train operation, have to a great extent rendered obsolete much of the automatic signaling placed in service 20 years or more ago. Heavier power is resulting in trains of 100 to 125 or more cars as compared with 35 or 40 cars years ago. Likewise, the rebuilding of lines to reduce grades and curvature, the use of heavier rail, better ballast and ties, all contribute to higher permissible speeds with safety. The trend is, therefore, toward longer trains operating at higher speeds; as a consequence the elimination of train stops is more imperative than heretofore. More interlocking plants at crossings and junctions, the remote power operation of outlying switches, spring switches, modern layouts of automatic signals, and the operation of trains by signal indication without written train orders, all tend to reduce the number of train stops and thus keep the heavier trains on the main track and moving toward their destination.

Early automatic signaling was installed primarily as a safety measure to stop trains in the event of danger ahead. The signals were spaced to give the maximum

protection for the short trains then operating without enough indications to adapt them to the increased braking distances required for trains moving at higher speeds. The modern idea is to use the signaling to keep trains moving, even at reduced speeds, and to avoid stopping them unless the track immediately ahead is actually occupied.

The desired result, i. e., to keep trains moving, can be accomplished in some cases by relocating the signals on a time rather than a distance basis as was done on a division of the Chesapeake & Ohio. On multiple track roads, with dense traffic, more indications may be required, such as on a portion of the Delaware, Lackawanna & Western, where the six-indication system is used, i. e., clear, clear-restricting, approach-restricting, approach, slow-speed, and stop. The track capacity can be increased and the train stops reduced by using short blocks and controlling the speed in accordance with the indications, so that the spacing between trains is reduced with safety while, unless a dangerous condition arises, trains are seldom required to stop. Other roads, as for example the Chicago & North Western, are accomplishing this desired result by installing automatic train control and removing wayside signals.

In conclusion it may be said that a considerable proportion of the automatic signaling of the country today is not only obsolete but is also not so located as to keep trains moving, which objective should be the chief function of modern signaling.

Facilities for Station Agents

THE sentiment that the station agent is one of the pillars of any railway organization has often been voiced, and much has been said in the *Railway Age* and elsewhere concerning the advisability and the necessity of furthering the education of agents by personal contacts, instructive letters, and attendance at division or system meetings, where a co-operative discussion of duties and responsibility might be had. These activities have accomplished a great deal, particularly personal contacts through visits of the division superintendents, trainmasters, traveling freight and passenger agents, storekeepers and accountants.

The maximum station efficiency cannot be attained, however, until more thought and care are given to the construction and arrangement of local stations, so that the agents may be properly equipped. The average medium size combination ticket, freight and telegraph office will serve as an illustration of this necessity. Rarely is the agent at such a station supplied with properly appointed cabinets or files for blanks, records, report forms or stationery, all of which must be kept on hand and used regularly so that this, that and the other auditor may obtain the information he asks for.

The chief architectural feature is usually a bay window, and the space behind it is occupied by a telegraph desk or a table, with the train order signal levers in the middle. Under this table are cupboards, with two or perhaps three drawers, in which must be kept working files, records, extra blank forms and copies of telegrams sent and received. Since this cupboard generally houses the telegraph or telephone battery, space is still further restricted. As a result, the top of the table is usually littered with newspapers, telegraph blanks, report blanks, tariffs and sometimes a coat and hat or a lunch pail and a lantern. A similar lack of accommodations is faced by the ticket clerk and by the freight clerk, who usually have no proper file cabinets or pigeon holes for their needs. There is seldom a locker or closet for wearing apparel; and the bill-copying press must occupy

the space behind the stove or be out in the freight room. All of the employees must do the best they can with makeshift devices constructed by the bridge carpenter from old packing cases when the weather was too inclement for him to do anything else.

This is a situation that needs correction, and the remedy is reasonably simple and inexpensive. A study should be made of the size, quality and style of forms and reports, of filing necessities as to correspondence, books of rules, tariffs and circulars, in order that the most efficient means of keeping these and other necessities of the office may be provided. Proper cabinets should also be erected in the freight room for the filing of the accumulation of historical records which must be kept for years, so that the agent may be able to answer questions from claim agent, auditor and superintendent, without taking days and disrupting his organization.

Such conveniences are inexpensive and justify the expenditure necessary by the saving of time, which is now spent in looking for things or correcting errors due to the lack of quickly available information. Besides, the good effect on the morale of employees of a clean, neat station is not to be overlooked.

Train or Motor Vehicle?

ALTHOUGH railroad men must view with regret the serious problem presented by the status of their passenger traffic, they will recognize that in the nature of things much of the decline in the business has probably been inevitable. In a sparsely settled territory where all the traffic ever available justified a railroad in running but two trains a day, one could scarcely expect a man to lose a whole day in making a 12-mile round trip by train, when he could make it in his car in an hour or two. Railroads for such short trips, where business is not great enough to warrant frequent service, never were a desirable means of transportation. They handled the business at one time, not because they were suited to it, but because nothing better offered. It may, and probably does, cost about 10 cents a mile to operate an automobile, but the passenger's time is also presumably worth something. In territory where railroad service is not frequent, the man who uses his automobile instead of the railroad for short trips will frequently save more in time than he will lose in greater transportation costs.

The private automobile thus has a definite place in any comprehensive scheme of passenger transportation. Likewise with the motor coach. Its economic place lies between the automobile and the train—doing a common carrier business over shorter routes than the train and giving a service approaching in convenience that of the private automobile. Then comes the train—which, under any economic division of transportation responsibility, would be supreme in the field of the long haul and in the short haul also where dense population makes frequent service possible.

Americans have the reputation of being a wasteful people and publicists, economists and engineers have been telling them so with increasing earnestness since the war. If a man takes a trip in a private automobile when he could do so more economically—convenience also considered—by motor coach or train, then he is wasteful. Likewise if he chooses a train or a motor coach when, all things carefully considered, his own car should carry him—that also is wasteful.

But how keep a man from wasting what is his? Certainly not by coercion. The economic spheres of the various methods of transportation can be determined as far as the common carriers are concerned by joint owner-

ship or agreement—i.e., the railroads themselves operating motor coaches or agreeing with operators to co-ordinate their services rather than compete. The automobile owner however can be approached only by persuasion—which today means advertising. And he should be approached honestly with the full admission that his own car has its legitimate economical uses, and that the motor coach has its.

A sales message for train service which would recognize the validity of the claims of the motor vehicle, while at the same time making a strong plea for train service where it is superior, might logically follow such an outline as this:

1. Travel in your own car if your time is valuable and you can get there and back much quicker than in a coach or train.
2. Travel by motor coach if it will serve you almost as well in time and convenience as your car, because in such cases it is more economical.
3. But—if you are going far, or if you live in congested areas where train service is frequent *travel by train*, because in such cases it is the quickest, the cheapest, the most convenient, the most comfortable and the safest method of transportation.

Begging the Valuation Question

EXPRESSIONS by some representatives of the government seem to be narrowing the railway valuation question down to one fundamental issue that will have to be settled before much progress is made as to other aspects of the problem. Are railway rates under the present law to be measured on the basis of what is necessary to produce a fair return "as nearly as may be" on a fair value, or is fair value to be determined by rates which a fair percentage on it would require?

It would almost seem that the question would answer itself, but the Interstate Commerce Commission has for some time rather hinted that its idea of a fair value is the amount on which it believes the railways should be allowed to earn a return, and its special counsel in the O'Fallon recapture valuation case told the court that a fair value of the railways is something entirely different from the "economic concept" of value, but what the commission thinks is fair.

This position is expressed even more frankly by Blackburn Esterline, the assistant to the solicitor general of the United States, who represents the government in suits to set aside orders of the Interstate Commerce Commission. In his annual report published with the report of the attorney general, Mr. Esterline refers to three important court cases involving the valuations of the Los Angeles & Salt Lake, the Kansas City Southern and the St. Louis & O'Fallon, saying that the railways are claiming values highly in excess of those found by the commission and that "if they should ultimately prevail in the extreme positions they have sought to maintain in some of the district courts, the result would follow inevitably that rates must be increased to enable the carriers to earn the fair return on the higher values, and the prospects of the recapture by the government of any excess earnings would fade."

An officer of the Department of Justice would normally be expected to assume that if the courts should sustain the railways the result would be correct; that rates, to the extent that they may be governed by value, should go up, and that there would be no occasion for recapture unless some road earned more than 6 per cent on the value sustained. But Mr. Esterline, after stating that the validity of the recapture clause was sustained by the Supreme Court in the Dayton-Goose Creek case, says: "The pending litigation will determine whether the transportation act of 1920 (of which the so-called recapture clause is the key) shall be made effective

or whether its whole purpose shall be frustrated."

This implies a complete reversal of the idea that value should be found as a yard-stick with which to measure the net return produced by rates. By the same process of reasoning even the commission's tentative valuation of 1920 must have been too high because it resulted in a considerable increase in rates. Also, by the same token, the state commissions that are contending that the commission's tentative valuations are too high must be held to have a better concept of value than the federal commission. Section 15a gives as the reason for the recapture clause the impossibility of establishing uniform rates on competitive traffic that will not enable some of the carriers to receive in excess of a fair return. It does not say that the purpose is to raise revenue for the government to collect. And the consolidation provisions of the act, in directing the commission to prepare a plan for the consolidation of the railways into a limited number of systems, says that they shall be so arranged that the systems can employ uniform rates and earn "substantially the same rate of return." Would Mr. Esterline assert that such consolidations would frustrate the purpose of the law if they should so equalize the earnings of the roads that none would earn an excess?

Proposed Rate Legislation

THE National Industrial Traffic League is an organization composed of the traffic managers of numerous large industrial and mercantile concerns and commercial organizations and its views regarding railway regulation always are entitled to respectful consideration. As we have surveyed the recommendations regarding railway legislation adopted at its recent meeting in Chicago (*Railway Age*, December 7, page 1123), however, we have found it difficult not to conclude that its members have forgotten much of the history of regulation and transportation in this country during the last twenty years.

The league favors important changes in the provisions of the Interstate Commerce Act regarding the regulation of rates. Instead of having the law provide that the rate structure of each large group of railways shall be based upon the aggregate value of the properties of the railways as is now required by Section 15-A, it would have it merely provided that rates should be so made as to enable the carriers to earn sufficient net returns to enable them to meet the transportation needs of the country. This means that it would practically eliminate valuation as a basis of rate regulation, and free the Interstate Commerce Commission from the requirement that it shall determine from time to time what will be a "fair return on a fair valuation" and endeavor to adjust rates accordingly. In line with this proposal, the league favors the continuance of the commission's work of making a valuation only until the primary valuations have been finished, and apparently would not thereafter have the valuation used or referred to excepting in cases in which the railways appealed to the courts in defense of their alleged constitutional rights.

Some Regulation History

The whirligig of time brings many changes. In 1910 the railways sought a general advance in rates, principally upon the ground that, because of increasing wages and prices, they must have higher rates or the net return earned by them would become insufficient to enable them to provide adequate transportation service. Many of those who opposed this advance in rates, including spokesmen of big shippers, advocated a valua-

tion of railways as a basis for determining what the railways were entitled to earn. Most of the railways then opposed a valuation upon the ground that it would not afford a sound or practical basis for the regulation of rates. In the decisions denying the advances, however, a valuation was advocated by the Interstate Commerce Commission, and in 1913 the La Follette valuation law was passed.

The regulation of rates was such for some years before this country entered the war that the net return earned by the railways was inadequate, their development declined, they became unable to handle the country's traffic, and finally government operation was adopted. The rate-making provisions embodied in Section 15-A of the Transportation Act were adopted because Congress was convinced by those who advocated them that more definite rules for rate regulation must be given the Interstate Commerce Commission. It was already accepted as the constitutional law of the land that railways must be allowed to earn a "fair return on a fair valuation." The commission was already engaged under the La Follette law in making a valuation. Therefore the only requirements regarding rate-making that Section 15-A actually added to the existing law were, first, that the commission should, from time to time, determine what would be a fair percentage of return, and, secondly, that in determining this it should give consideration to the country's need for adequate development of transportation facilities.

Now, measured by no reasonable test have these provisions caused excessive rates to be fixed. Even on the tentative valuation made by the commission the railways as a whole have never earned approximately a "fair return" excepting in 1926. Traffic has moved freely and has grown under the rates allowed to be charged.

Why, then, are there being advocated these proposed changes in the law? First, it is said that the recapture provisions are unfair and tend to cause uneconomical management. They are unfair because they may be applied to a road in any year in which it earns over six per cent regardless of the number of years in which it has earned less than a fair return, and because apparently they may be applied to some roads in years when the average earned by all roads is less than a fair return. There is, however, no evidence in support of the view that they have caused or tend to cause uneconomical management. Furthermore, the effect that the general policy of rate-making followed may have on the comparatively few roads having earnings subject to recapture is much less important than the effect it may have upon the larger number of roads that will usually or never have any earnings subject to recapture.

Secondly, the fear is expressed that if the present valuation and rate-making provisions are kept in effect they may result in a big advance in rates. This apprehension evidently is based on the assumption that the railways may get a decision from the Supreme Court of the United States holding that they are entitled to earn a fair return upon a reproduction cost valuation. It is the irony of fate that the classes of persons who fifteen years ago favored a valuation as a means of keeping rates down are, to a large extent, those who now want it left unfinished or unused lest the result should be to authorize and require rates to be advanced. Is it their opinion that a valuation would be a fair basis of regulation if its use would help to keep rates down, but an unfair basis if its use would help to put rates up?

We believe, however, that their apprehensions are excessive. We do not believe the radical and unfair method of valuation favored by a majority of the Interstate Commerce Commission will be approved by the

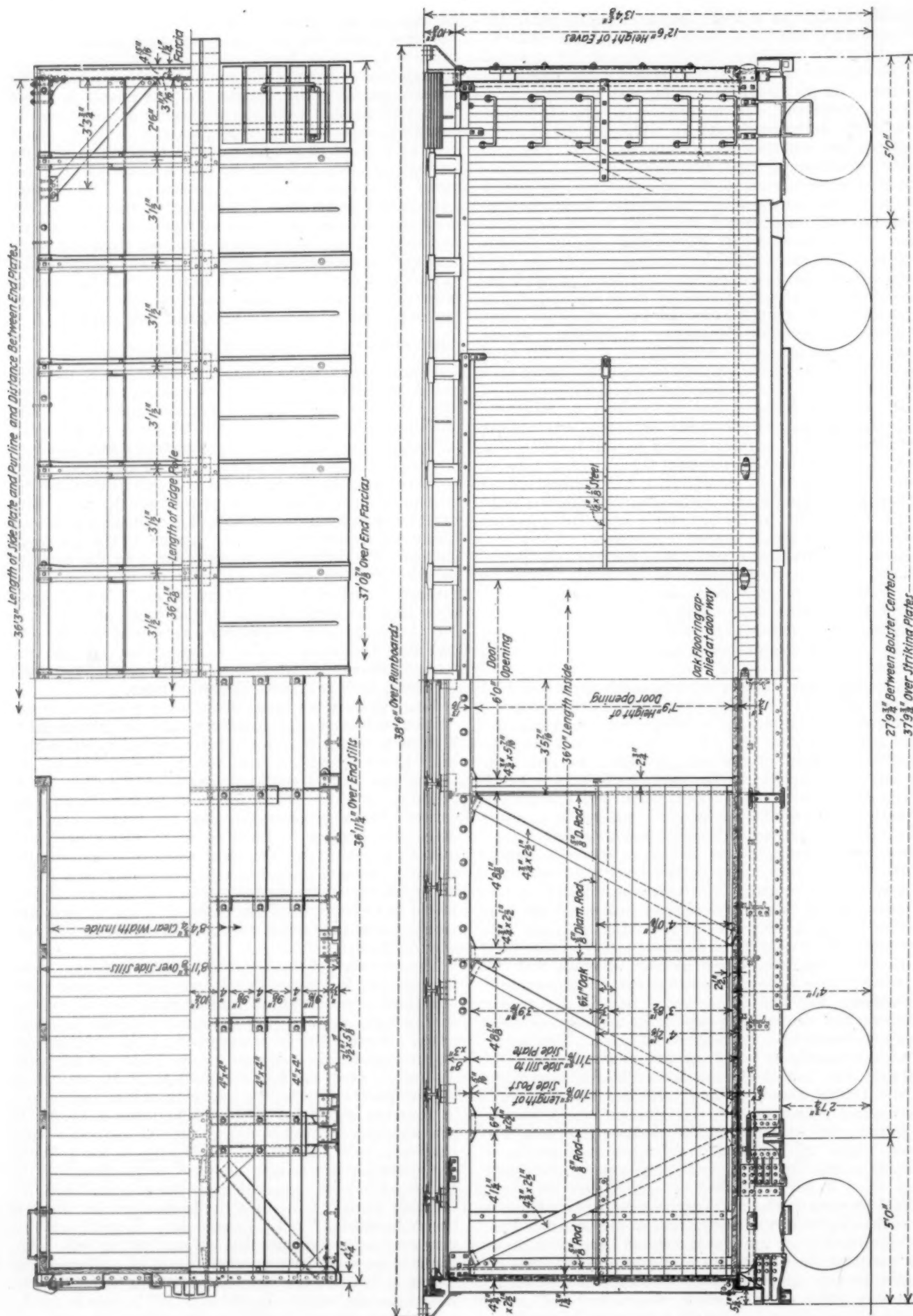
Supreme Court. Neither, however, do we believe the Supreme Court ever will hold that each railway is entitled to a valuation based solely on its probable cost of reproduction. Even if the court should go a long way toward upholding the reproduction cost theory, it seems most unlikely that rates actually would be based on the resulting valuation. It is highly improbable it would ever be possible to get the railways to agree to seek an advance in rates sufficient to give a so-called "fair return" on a reproduction cost valuation. Their managers would know that if they did so they would encounter the united opposition of regulating commissions and shippers, and would arouse a public sentiment more hostile than ever existed before. Railway officers fully realize that rates should be made not only in accordance with what the traffic will bear, but also in accordance with what public sentiment will stand.

Objections to Proposed Changes

What, then, are the substantial objections to the proposed modifications of the rate-making provisions of the valuation law? Such legislation would practically withdraw from the Interstate Commerce Commission all instructions, excepting to make rates "just and reasonable" and so as to foster adequate development of transportation facilities. We know quite definitely, especially because of the opinions rendered by a majority of the commission in the O'Fallon valuation case, the policy of regulation it would pursue if the proposed changes in existing laws were made. In the decision in the O'Fallon case a majority of the commission favored so-called "prudent investment," less a large deduction for depreciation, as the basis of valuation. No doubt, if such legislation as is proposed by the National Industrial Traffic League were adopted the commission would, whether avowedly or not, use such a general basis in the regulation of rates.

Now, while rates based entirely on a cost of reproduction valuation undoubtedly would be unreasonably high as a whole, it seems equally beyond question that rates based on such a valuation as a majority of the commission favors would be unreasonably low. It is proposed, in effect, by the league to let it be determined entirely by the commission what net returns the railways will require to maintain their credit and adequately develop their facilities, when it is known that the commission already has committed itself to a policy of regulation which, in the opinion of railway officers, would be destructive of the credit of most railways and would make impossible adequate development of railway facilities.

The attitude assumed by the League suggests, as we have already intimated, that its members are now more interested in the future of railway rates than of railway service. Service has been good and adequate for some years. Apparently, in consequence, most shippers are disposed to believe it always will be good and adequate. Therefore, even the traffic managers of big industries apparently are disposed to join with radical public men in favoring legislation calculated to make it harder to get advances of rates and easier to get reductions. President F. W. Sargent of the Chicago & North Western recently made an able address at the dinner of the Railway Business Association on the subject, "Are We Drifting Back?" In the attitude assumed by the National Industrial Traffic League Mr. Sargent can find very convincing evidence that we are drifting back. Apparently we must have another period of prolonged car shortages before even large shippers will be finally convinced that the service the railways will be able to render will always depend largely on the way their rates and earnings are regulated.



New Haven Redesigned 30-Ton Box Cars

Rebuilt cars have increased strength and reduce maintenance costs

THE New York, New Haven & Hartford is now carrying out a program at its Lamberton street freight car repair shops at New Haven, Conn., of rebuilding a series of 30-ton box cars. These cars, which have been in service for some years, have been completely redesigned for two purposes; first to strengthen the cars, and second, to reduce future maintenance expenses.

When the cars are taken into the shop, they are stripped of all wood structure. The underframe is straightened and a cover plate applied to the center sills to increase the strength. All of the original end sills are removed and new end sills applied which strengthen the ends of the cars over the original design. The general arrangement of the end sill is shown in one of the illustrations. To complete the strengthening of the car ends, the original draft gears, not A.R.A. standard, are removed and replaced with a modern friction type draft gear with cast steel yokes and Type D couplers, the arrangement of which is shown in one of the illustrations. Integral rear draft lugs and bolster center fillers are applied, as well as combined striking plates and front draft lugs. All defective underframe details are either repaired or removed and replaced by new.

The trucks are thoroughly overhauled and new journal boxes, bearings, wheels, etc., are applied where necessary. Where the trucks are equipped with pressed steel bolsters, they are either reinforced or are scrapped and replaced with cast steel bolsters. The old design malleable column castings are replaced with properly designed steel castings. The arch bars are reset where necessary and No. 2 brake beams applied.

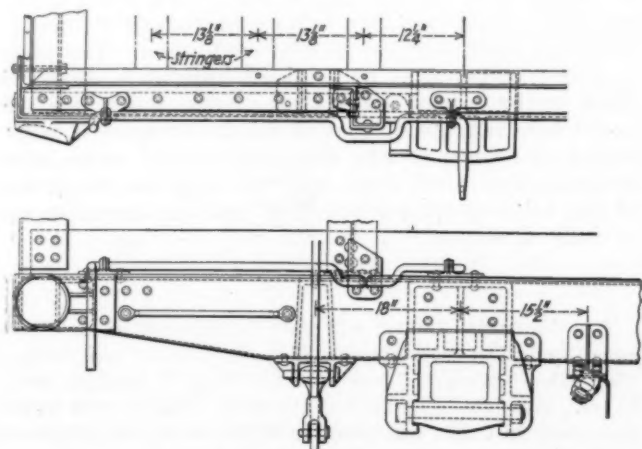
The Superstructure

The original superstructure of light framing is replaced by posts and braces that give approximately 25 per cent increase in strength. The framing consists of 6-in. by 2½-in. side posts at the bolsters with 4¾-in. by 2½-in. side posts at other locations and 4¾-in. by 2½-in. side braces. The small malleable iron post and brace

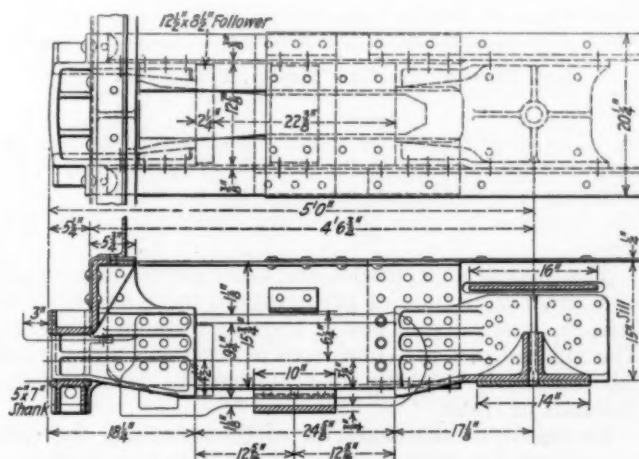
pockets used in the original design have been replaced by pockets of heavier and larger design, which in turn, are riveted directly to the steel side sills instead of resting on the wood side sills. The inside lining, which extends 4 ft. 5/16 in. above the floor, is made of 13/16-in. yellow pine with a 1-in. by 6-in. oak belt rail nailed to the girth. Standard size car sheathing is used. Particu-



One of the New Haven 30-Ton Box Cars Redesigned to Increase its Strength



The General Arrangement of the End Sill



The Draft Gear Arrangement

floor. The oak flooring is nailed to 4-in. by 4-in. stringers 9 1/8 in. apart.

Reinforced Ends

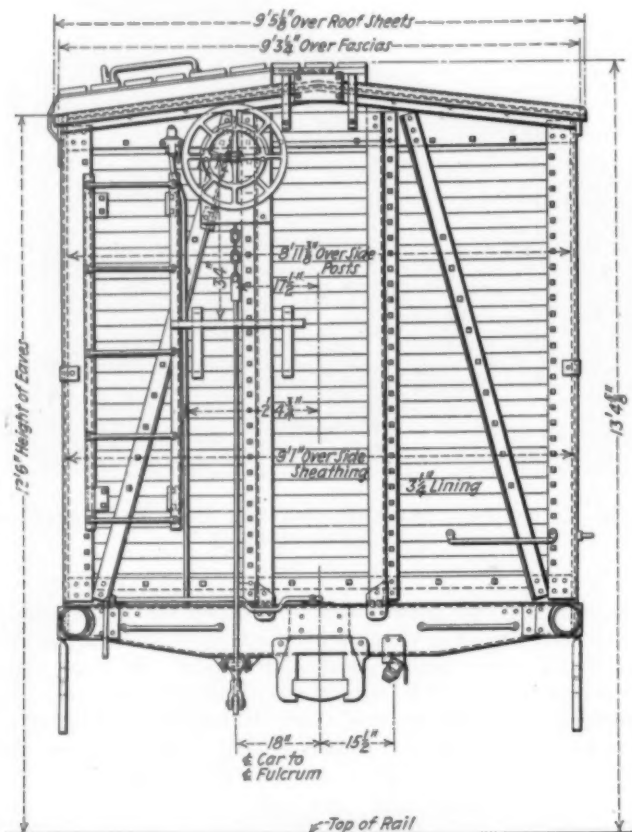
Steel reinforced ends using Z-bar end posts and angle diagonals have been applied to a large number of the cars, other cars being equipped with all steel ends. All of the cars are fitted with pressed steel end plates.

The 6-ft. door opening is framed by 4 3/4-in. by 5 7/16-in. door posts. Metal-bound doors have been applied to some of the cars and all-steel doors to the others.

They are top hung, equipped with combination door stop locks and door closing and starting devices. Pressed steel carlines, 3 ft. 1 1/2 in. between centers, support the outside metal roofs.

Principal Dimensions

The inside length, width and height are 36 ft. 3 in., 8 ft. 4 3/4 in. and 8 ft. 5 9/16 in., respectively. The height from the rail to the running board is 13 ft. 4 5/8 in.



End View of the New Haven 30-Ton Box Car

in. The length over the striking plates is 37 ft. 9 3/4 in. and over the end sills 36 ft. 11 1/4 in. The width over the side sills is 8 ft. 11 3/8 in. and over the eaves, 9 ft. 5 1/8 in. The distance between the bolster centers is 27 ft. 9 3/4 inches.

The underframes, trucks, and other parts salvaged are in a remarkable state of preservation, there having been little or practically no loss of sections through corrosion. The finished cars are considered to represent a first-class job completely fulfilling all requirements, including the demands of traffic.

By reason of the character of these repairs, the cars are expected to play a decided part in materially reducing future maintenance expense.

President Urges Consolidation Legislation

WASHINGTON, D. C.

DELAY as to railroad consolidation legislation is "holding back the progress of our country," said President Coolidge in his message to Congress on December 6. The text of that part of the message follows:

"In order to increase the efficiency of transportation and decrease its cost to the shipper, railroad consolidations must be secured. Legislation is needed to simplify the necessary procedure to secure such agreements and arrangements for consolidation, always under the control and with the approval of the Interstate Commerce Commission. Pending this, no adequate or permanent reorganization can be made of the freight rate structure. Meantime, both agriculture and industry are compelled to wait for needed relief. This is purely a business question, which should be stripped of all partisan bias and decided on broad principles and its merits in order to promote the public welfare. A large amount of new construction and equipment, which will furnish employment for labor and markets for commodities of both factory and farm, wait on the decision of this important question. Delay is holding back the progress of our country."

Inland Navigation

In discussing inland navigation the President said that "the Inland Waterways Corporation is proving successful and especially beneficial to agriculture" and that "a survey is being made to determine its future needs." However, he added, with apparent reference to the proposal to expand its operations, that "it has never been contemplated that if inland rivers were opened to navigation it would then be necessary for the federal government to provide the navigation," and that "such a request is very nearly the equivalent of a declaration that their navigation is not profitable, that the commodities which they are to carry can be taken at a cheaper rate by some other method, in which case the hundreds of millions of dollars proposed to be expended for opening rivers to navigation would be not only wasted, but would entail further constant expenditures to carry the commodities of private persons for less than cost."

"The policy is well established," he added, "that the government should open public highways on land and on water, but for use of the public in their private capacity. It has put on some demonstration barge lines, but always with the expectation that if they prove profitable they would pass into private hands and if they do not prove profitable they will be withdrawn. The problems of transportation over inland waterways should be taken up by private enterprise, so that the public will have the advantage of competition in service. It is expected that some of our lines can be sold, some more demonstration work done, and that with the completion of the Ohio project a policy of private operation can be fully developed."

THE SOUTHERN PACIFIC will place in operation on the Pacific coast during December six new 77-ft. steel dining cars equipped with roller bearings. Three different types of bearings are to be used, each type being fitted to two cars. The cars are finished throughout in Cuban mahogany, while the chairs are upholstered in Spanish leather. The kitchens are equipped with dishwashing machines.

Human Engineering in American Industry*

"The human element, after all, determines the progress of business and its service to the country at large."

By Charles M. Schwab

President, American Society of Mechanical Engineers, and
Chairman of the Board, Bethlehem Steel Corporation

OF all the arts and crafts and professions to which men devote their energy and their talents, none more profoundly affects the destiny of the human race than engineering. From the pyramids of Egypt to the Panama canal and present-day achievements in conquering time and space, the profession of the engineer has played a dominant part in the lives of men and nations. It has chosen the ablest, the most daring, and the most energetic of men, has inspired them with the desire for achievement, and has then exacted their utmost of devotion and service. It is but natural that the result has been measured in better and higher standards for society. Wherever engineering has excelled, there we find the highest order of life.

In their progress during the last half century, engineering and industry have marched side by side. Their development is a remarkable story of scientific achievement. The mobilization of capital and engineering talent has made possible the large scale industry that is the leading characteristic of the wonderful era of progress in which we live.

Human Problems in an Industrial Civilization

This new industrial order created its own problems—new problems of social and economic aspect requiring the highest type of statesman-like management for their solution. Industry has brought together and welded into single organizations hundreds, sometimes thousands, of human beings with widely different habits of life and thought. For the success and happiness of these human beings and of society as a whole, it is vitally important that mutual relationships should be adjusted on the basis of fair dealing and co-operation. Here is a problem embodying the recognition of all the differing physical and mental characteristics of individual human beings, and one peculiarly within the province of the engineer which includes all industrial benefits to mankind.

Need for the solution of this problem brought forth a new concept of the management of business. At the same time it created a new science, a new field of engineering which, for want of a better name, we call human engineering—the practical science of humanizing industry and of making the men in it substantial self-respecting workmen and citizens and factors co-operating in the success of the business. This new science recognizes that industry is dependent upon mass production, machine processes, and technical skill, but that the human element after all determines the progress of a business and its service to the country at large.

Forward-looking management, as well as far-sighted

representatives of employees, are coming to realize that if full benefits are to be had from the creations of engineers, industry must be viewed as a co-operative undertaking, in the advancement of which every supervisor and every employee is an important factor. They recognize that conflict between capital and labor is destructive of the interests of each; that it is unnecessary and mutually expensive.

Herein lies a field where expert service in enlisting the interest and confidence and good-will of the workers becomes just as important as the study that has been given to the characteristics and utilization of materials. Out of its solution comes a new code of economics, a code that aims not only to provide food and clothing and shelter, but also to elevate society at large and to place a true dignity upon labor, a dignity that yields a fuller and happier measure of life.

But this happiness does not lie along the road of abolishing work, for work is the cornerstone of real happiness. It lies in the doing of the day's work with a zest and good-will, under the spur of encouragement and rewarded with the satisfaction of achievement. This requires the co-operation of labor itself, not merely of the hand but of the heart as well. To obtain that co-operation requires leadership in industry that regards itself not as partisan but as a trustee striving to guide the efforts of both capital and labor into profitable channels.

Reasonable Wants of Industrial Workers

The job of the Bethlehem Steel Corporation, primarily is to make steel, but it is being made under a system which must be justified. If in addition to manufacturing products this system does not enable men to live on an increasingly higher plane, if it does not allow them to fulfil their desires and satisfy their reasonable wants, then it is natural that the system itself should fail.

What are these reasonable wants of employees, which they have a right to see satisfied as far as conditions of industry permit? I believe they include the payment of fair wages for efficient services; steady, uninterrupted employment; safe-guarding of their lives and health, good physical working conditions; a voice in the regulation of conditions under which they work; provision for them to lay up savings and to become partners in the business through stock ownership; and finally, some guarantee of financial independence in old age.

The Question of Wages

The desire of labor in connection with wages can, I believe, best be fulfilled by rewarding men in accordance with their contributions toward the success of the

* Extracts from the presidential address made at the annual meeting of the American Society of Mechanical Engineers in New York, December 6, 1927.

business. It is fundamental with human beings that they want individual recognition of and reward for their talents and achievements. This is the crux of the wage problem. The nearer we can come to fulfilling this want on a sound, justifiable basis that recognizes individual merit, the sooner shall we witness the solving of a long-standing and contentious question.

Relations in industry have sometimes become strained over the fundamental question of wages. The area of conflict was widened because of adherence to a policy which sought to group together at a uniform wage, regardless of individual performance, large bodies of workers even though geographically widely separated. Such a policy often tended to discourage effort and to reduce individual output to a standard set by the least efficient worker.

We have traveled far in our thinking on this fundamental question of reward for service. We have come to have a new viewpoint toward the payment of wages. Our better relationships have brought a clearer understanding of the reciprocal value to national well-being of a class of well-paid workers whose buying power is sufficient to take the output of our mass production. We are ambitious to see our workers receive an adequate wage—a wage that is sufficient to afford a worker and his family a decent standard of living with a margin for laying something aside—but we cannot entertain any economic theories as to doles or subsidies. We cannot lose sight of the fundamental law that requires full value in services for wages paid.

How to measure and relate output and wages on some fair basis has become an important function of management. We now realize the essential benefits derived from relating compensation to the contribution made by the individual, with the result that under the stimulus of measured return for service rendered, there is an increasing tendency for men to take a keener interest in the business, much as if they owned it. This applies to workers as well as managers.

The economic position of our workers has become the wonder of the world. The earnings of American wage earners in terms of what they can buy are probably greater now than at any previous period in American history; certainly they are far greater than those of the workingmen in any other country of the world. In the face of these higher earnings our foreign brothers marvel at the coincidence of lower costs. The answer is that American workmen have come to realize that wages and profits are paid out of the same pocket-book and that the return to each must be proportionate to effort expended.

Steady Employment

High wages do no good to the man who has no chance to earn them. Hourly and daily rates mean little to the employee who can work only a few days a month or a few months out of the year. Steady employment, therefore, ranks high among the needs of the workman. During the last few years industrial managers have been giving much thought to this question—to the elimination of the evil of unemployment. It has come to be realized that peaks and valleys of industrial activity, during which periods of feverish effort to get out products alternate with periods of idleness and stagnation, not only are undesirable from the standpoint of the working man but are wasteful and expensive to industry and to society as a whole. Toward the leveling of these peaks and valleys much has been done by the intelligent efforts of management; perhaps even more has been accomplished as a result of the sustained purchasing power built upon high

wages and of the changed buying methods of the public. This last-named element, in turn, has resulted largely from the increased capacity and reliability of both production and transportation. Thus we see the interdependence of all the elements in that intricate machine we call industry.

Financial Interest in the Business

But even with good wages and steady employment, the workingman is likely to lack one factor essential to his fullest efficiency and greatest interest in the company by which he is employed. This factor is ownership. A sense of proprietorship affords a powerful incentive to arouse interest in the performance of work. Recent years have seen a considerable growth in stock ownership by industrial employees. I would not minimize the possibilities of danger involved in this practice, nor would I urge every company, regardless of the character of its securities, to enlist its wage earners as partners. Under favorable circumstances, however, and with the proper safeguards against speculation and possible loss, stock ownership by employees may be one of the most successful incentives to thrift and to vital interest in the enterprise. We are greatly encouraged with the results of our own experience along this line. In our efforts to increase the interest of our employees in the business and at the same time to afford them a means of saving and investment, Bethlehem has for several years encouraged the employees to acquire ownership through the Employees' Saving and Stock Ownership Plan.

That they have enthusiastically responded to this opportunity is shown by the fact that in the short period of four years over fifty per cent of our employees have either paid or are paying for substantially seventeen per cent of the corporation's stock of this class outstanding, representing an investment at par value of \$17,000,000. Under a plan of this kind the mutuality of interest which should exist in industry finds its greatest expression.

Co-operation Through Representation Plan

Our company was one of the first to inaugurate employee representation in its plants, and in the early stages of the plan there was a natural tendency to lay the greatest emphasis upon its possibilities as a mechanism for grievance adjustment. Experience has shown, however, that this phase of its operation is giving way more and more to constructive efforts to improve conditions in the business and to constructive co-operation along the lines of increased efficiency, elimination of waste, and improved methods and quality and quantity of products. Along with this development has come a growth in morale and in sympathy and understanding between the employees and the officials. On the one hand the employees have gained a more intimate knowledge of their company and objectives, and on the other hand, the supervisors have come to realize more definitely than before their function as leaders rather than as drivers of men.

The plan, in its essentials, provides for the election by ballot of representatives by and from among the employees. It has for its purpose four fundamentals; to give the employees a voice in the determination of the conditions under which they work, to promote co-operation between employees and management in matters of efficiency and economy, to furnish machinery for the prevention and adjustment of differences, and so far as possible to provide and foster continuous employment.

All action taken under the plan is joint action, and regular meetings are held with management representa-

tives to discuss and pass upon questions that may arise. Each employee representative is guaranteed full independence of action, and Bethlehem accepts the policy of arbitration. In other words, if no satisfactory adjustment of the case is reached, it may be left to arbitration. In no case, however, during the past nine years has it been necessary for any case to go to arbitration.

One of the striking developments of this whole system, and one which represents in our judgment a far-reaching step, is a series of annual conferences at the various plants of the corporation. One of the objects of these conferences has been to make an annual report to employees just as the corporation makes an annual report to its stockholders. At these meetings the employee representatives and management representatives sit down with the president of the company and other executive officers for the consideration and discussion not only of employee matters, but of general business conditions and questions of company policy. At these conferences all subjects relating to employees and their welfare are discussed, the company executives report on the state of business and the outlook for the year as it may affect wages, working conditions, and the volume of product, and the employees present their point of view on their activities, on the steel business, and on plant operations. The officer in charge of industrial relations makes a report on the operation of all employee activities and the president himself discusses in a most intimate manner all phases of the corporation's business. Suggestions are freely made and openly debated. The result is that both management and men get an insight into what each other is thinking and an understanding of the other fellow's point of view, which cannot but be effective toward advancing the interests of all.

Safeguarding Life and Health

Bethlehem carries on a thoroughly organized and persistent campaign of accident prevention, first-aid instruction, and safety work. Permanent safety committees consisting of employees of various operating departments are charged with the duty of co-operating with their immediate supervisors in maintaining maximum safety of working conditions and they receive additional compensation for this service. One of the features of the first-aid work carried on under the guidance of competent doctors and nurses is a meet at which first-aid teams from various plants compete for substantial cash prizes. Since the beginning of this work more than 8,000 of our employees have received first-aid instruction.

To assist the employee in case of sickness or death, the corporation has a relief plan which covers all employees. Its purpose is twofold; first, to provide disability benefits when their income is cut off because of sickness or accident not provided for by law, and second, to provide death benefits for the widows and dependents of employees. Funds for the payment of benefits are derived from contributions by the employees and from contributions by the corporation, the corporation assuming all administrative expenses.

The administration of this plan is typical of Bethlehem's policy of joint management of affairs directly affecting the employees. Questions of general policy, amendments, changes, and problems arising under the plan are determined by a board of trustees, half of whom are chosen by the employees and half by the management. The amount paid out yearly in benefits under this plan is nearly \$1,000,000 and substantially all eligible employees throughout the corporation have become participants in it.

The company also maintains a well-organized medical service in each of its plants for the convenience of the employees, in the belief that sympathetic understanding on the part of the plant doctor is of equal importance to technical skill and that the medical department contributes a great deal toward providing steady work. As a result of all this effort we have reduced preventable accidents nearly sixty per cent in the last eleven years.

Provision for Support in Old Age

One of the most difficult problems not only in industry but in society as a whole is the maintenance of those who on account of old age are no longer able to support themselves. Bethlehem has a pension plan under which an employee who has reached the age of 65 and has rendered 25 years of service may retire on a pension. There are today under this plan more than 1,000 former Bethlehem employees, who, while not rendering active service to the company, are nevertheless as whole-heartedly interested as ever in its success. Ours is one of the newer pension plans, having been established only about five years ago, but already there is being paid out to pensioners nearly one-half million dollars a year.

The present tendency of workers to invest in the purchase of what are regarded by some as luxuries is sometimes viewed with concern. On the whole I believe this tendency is but a step in the march of progress to a higher standard of life—a fulfillment of the new code of economics under which the luxuries of yesterday are becoming the necessities of today. Fundamentally the whole trend is based upon the better economic position of the worker helping to place these conveniences within the reach of all. Workers will acquire them in accordance with their economic ability and to suit their individual tastes. They will make their own decisions as to their individual needs and will not require any special assistance in doing so.

But in the desire for home-ownership which ranks high among the ambitions of the average workman there is generally need for financial assistance. We believe that any assistance we can render our employees to help them realize this desirable ambition not only makes for better standards for them, but makes for a better community as well. With this in mind Bethlehem for several years has had a plan under which the company helps its employees purchase homes on easy partial payments.

Effects Upon the Stability of Business

I believe that the present stability of business is due largely to the better relations that have been brought about between employers and employees. It was not so many years ago that buyers of basic products were under a constant fear that their supplies of essential materials would be interrupted by strikes, lock-outs, or other overt expressions of industrial ill-will. They could not be sure of uninterrupted production. Therefore, it was quite natural that they bought beyond their needs and laid up surplus supplies which, in periods of business recession, were dumped on the markets and added to the demoralization and stagnation which formerly characterized several down-turns in the business cycle.

Today this situation has changed. It is only in a few industries, having special problems of their own, that there is at any time any serious danger of suspension. Buyers realize that they are no longer the victims of conflict and misunderstanding between management and labor in the producing industries. The confidence which they have, therefore, come to have in the ability

of industry to supply continuously and uninterruptedly their requirements has revolutionized purchasing methods. This new method of buying has gone far to level the peaks and valleys which formerly characterized the business cycle. With this greater stability of business has come more regularity of employment.

Conclusion

Human engineering, therefore, by improving the relationships between employers and employees, has lessened industrial conflict and misunderstanding, benefited workers and owners of industry, stabilized business through improving service to the purchasing public, and fostered the continuous employment at high wages upon which is built our present economic prosperity.

Successful industrial management in the future is going to depend more and more upon management of men rather than upon the organization of machines and other problems which are ordinarily considered in the sphere of practical engineering.

Let us hope that the new viewpoints from which industry is being regarded will hasten the day when we shall cease to talk about a separation between labor and capital and begin to think of management in an all-inclusive sense—a new concept of management to include employees and employers striving hand in hand to bring success to the undertakings in which they are engaged.

Business Men's Commission on Farm Freight Rates

PRESS reports have indicated that the Business Men's Commission on Agriculture, which was created by the Chamber of Commerce of the United States and the National Industrial Conference Board, jointly, somewhat definitely recommended the readjustment of freight rates in accordance with the Hoch-Smith resolution, which would result in reductions on farms products. It is desirable that railway men should know just what the Business Men's Commission did say upon this subject and therefore the part of its report on "Freight Rates" is given in full below:

"Existing freight charges press heavily on districts remote from markets and on the producers of such agricultural commodities as come in freight classifications subject to higher rates. It is generally agreed that the railroads are giving greatly improved service on agricultural as on all other commodities, and they are, of course, entitled to rates sufficient to cover their total costs. Unless reasonable profits can be earned, the service will suffer; and prompt and efficient service is, if anything, more important to agriculture than rate reductions. The roads which move agricultural commodities in the greatest volume are by no means the most prosperous, and even where one or another of these roads would reduce rates, permission to do so is sometimes refused as being contrary to the general interest. The relatively unprosperous condition of the agricultural roads would go to show that, from the point of view of total costs, the existing rates on agricultural commodities are not unduly high.

"A different division of rates on through shipments appears to be a possible remedy. It is certain that central and southern agriculture (and these are the great agricultural regions of the country) could immediately be given substantial aid if freight rates could be reduced,

since no matter who finally pays freight charges there can be no doubt that changes in these rates affect the producer immediately. The first impact of an increase is on him, and similarly the benefit of a decrease would in the first instance accrue to him, whatever might be the eventual result.

"The desirability of some readjustment in the rate structure to this end has been recognized in a joint resolution of Congress, approved January 30, 1925, usually referred to as the Hoch-Smith resolution and addressed to the Interstate Commerce Commission.

"This commission feels that it is beyond its province to do more than commend the spirit of the Hoch-Smith resolution and to urge expedition in putting into effect any reductions of the rates on agricultural commodities which may prove feasible and consistent with it.

"To this end the railroads should, with an enlightened view of their own interest, co-operate in the fullest possible manner. There is little, if any, evidence that they are not doing so. It does not at first sight appear that freight rates on agricultural commodities can be generally lowered without arbitrary reduction of the revenues of certain roads which even now are failing to earn a fair return. If this is so, such reductions would mean poorer service and would probably in this way do more harm than good. Whether it is so or not, can only be left to the Interstate Commerce Commission to determine, after which action along the lines suggested by the Hoch-Smith resolution can be taken.

"It should be noted that while transportation costs are of great importance to certain producers the total freight charges affecting farmers on both outgoing and incoming commodities are estimated to amount to not more than six per cent of the gross cash income of the industry. Any practicable reductions of freight rates would, therefore, affect sectional rather than national agricultural prosperity. Further than this, unless costs of railroad service can be materially cut, and of this there is no strong promise, freight rates must be almost entirely dependent on wages paid by the roads. The presence of two independent rate fixing bodies, the one dealing with freight rates and the other with wages, divides responsibility and leaves little discretion to the former of the two groups but to grant an upward revision of freight rates when wages are increased. The power of the Interstate Commerce Commission over freight rates is thus by no means absolute, while the railroads have almost no power at all."

The commission made numerous other recommendations regarding changes in the tariff, government policies to facilitate the extension of markets for farm products, etc. Its members are as follows: Charles Nagel, chairman, St. Louis, Mo.; E. N. Brown, chairman, St. Louis-San Francisco railway; E. M. Herr, president, Westinghouse Electric and Manufacturing Company; J. G. Lonsdale, president, National Bank of Commerce, St. Louis, Mo.; A. F. McKissick, vice-president, Alice Mills, Greenville, S. C.; Clay Miller, of Clay Miller & Company, San Francisco, Cal.; Arthur R. Rogers, president, Rogers Lumber Company, Minneapolis, Minn.; John Stuart, president, Quaker Oats Company, Chicago; Alfred H. Swayne, vice-president, General Motors Corporation, New York City; and Paul M. Warburg, chairman, International Acceptance Corporation, N. Y.

SAFETY FIRST—AND ALL THE TIME.—A track foreman on the Philadelphia division of the Pennsylvania has had to report but one casualty in 21 years, where an employee was injured by accident so as to suspend work. The foreman says that his men have learned the careful habit; and, evidently, we may add that the foreman himself must be a teacher of careful habits

Are We Making Progress in Rail Service?*

A review of recent developments indicates that improvement is being effected

By C. B. Bronson

Assistant Inspecting Engineer, New York Central, New York City

RAIL manufacture, from steel making to the finished product, presents a complex problem. It is spoken of as a tonnage proposition which is quite correct and could not be otherwise for an article of its size and character. This fact, however, does not prevent the production of quality along with quantity, any more than in the mass production of automobiles or other commodities.

Criticism has been directed recently at the manufacturers for lack of initiative and progress, but much has been accomplished for which credit is due the rail makers. Several of the older plants have been scrapped or retired during the last 15 years and important improvements and changes have been made in others; two new mills have been constructed during this time, equipped with the most modern facilities; one mill has completed changes costing over \$1,000,000 during the past year, and another one is spending several million dollars for modernization. Co-operation is illustrated by the fact that the mills were forced to reorganize their plant facilities completely to comply with the request for rails of 39 ft. standard length, involving large outlays, and at no extra cost to the purchaser. The classification of rails according to chemical content and degree of usefulness has also become universal practice, and at no extra cost to the railroads.

The various details involved in rail making are being looked into with greater care and attention. Improvements have been made in open-hearth furnace construction and methods of refining the steel in the bath. Whole

heats are often diverted by the melter at the furnace and are cast for use in products of less importance than rails. Attention is being given to conditions of pouring to promote sound and quiet-setting ingots, while the accessories are being watched to see that they are of proper design and materials, and kept in condition.

New Steels Are Being Developed

That effective results are being obtained is indicated clearly by the considerable reduction in rail failures the country over. A uniformly higher average product is meeting the demands of heavier traffic with a lesser and diminishing rate of failure. Further improvements are not only desirable, but attainable by impressing upon the makers, both individually and collectively, what the service problems constitute, and by sound and reasonable judgment in selecting the proper type and grade of steel for the particular conditions of traffic.

Rails made of electric steel have been offered and tried, but the reaction to their general use has been slight. Chrome nickel and other alloy steels have been experimented with in limited quantities, but with indifferent success. Hadfield or "rolled" manganese steel, containing 1.0 to 1.35 per cent carbon and 10 to 15 per cent manganese, is another alloy steel which has great toughness and resistance to abrasion properties and which has proven very successful on curves under certain conditions, but its cost is high and the demand is moderate. Heat treated rails, made under various processes, have been offered but the demand is again limited, and has not, to date, warranted the expenditure of several million dollars for special plant and equip-

*From a paper presented before the Association of Maintenance of Way Foremen, C. C. & St. L. Ry., Cincinnati, Ohio.

TYPE OF LOCOMOTIVE	CLASS	YEAR BUILT	DIAM. OF DRIVERS	NO. PAIRS DRIVING WHEELS	TOTAL NO. WHEELS IN LOCOMOTIVE	WEIGHT PER DR. AXLE	TOTAL WT. ON DRIVERS	TOTAL WT. OF ENGINE	MAXIMUM TRACTIVE EFFORT	WT. OF RAIL OPERATED OVER	MOMENT OF INERTIA OF RAIL SECTION	RATIO OF DR. WHEEL LOAD TO MOMENT OF INERTIA OF RAIL	TOTAL WT. OF ENGINE DIVIDED BY MOMENT OF INERTIA OF RAIL SECTION
PASSENGER LOCOMOTIVES													
C-3	4-4-0	1901	77 in.	2	8	47,200	94,400	146,400	17,690	80-lb.	28.5	830 to 1	5150
L-10-A	4-4-2	1902	79 "	2	10	54,000	108,000	161,000	23,510	80-lb.	28.5	950 to 1	6350
J-40	2-6-2	1902	81 "	3	10	44,500	134,000	186,000	24,080	80-lb.	28.5	780 to 1	6600
K-2-A	4-6-2	1907	79 "	3	12	57,700	173,000	267,800	29,160	100-lb.	48.5	600 to 1	5500
K-3-A	4-6-2	1911	79 "	3	12	57,200	171,500	269,000	30,900	100-lb.	48.5	590 to 1	5550
K-3-G	4-6-2	1913	79 "	3	12	57,350	172,000	271,000	30,900	105-lb.	50.0	580 to 1	5400
K-3-P	4-6-2	1920	79 "	3	12	64,350	194,500	288,000	*40,610	105-lb.	50.0	555 to 1	5750
K-3-Q	4-6-2	1923	79 "	3	12	64,350	194,500	295,500	*40,610	115-lb.	64.0	500 to 1	4650
K-5	4-6-2	1925	78 "	3	12	61,500	184,500	301,000	*47,300	105-lb.	49.8	620 to 1	6050
Hudson	4-6-4	1927	79 "	5	14	60,700	182,000	343,000	*53,260	105-lb.	49.8	610 to 1	6900
"	4-6-4	1927	79 "	5	14	60,700	182,000	343,000	*53,260	127-lb.	63.7	360 to 1	4000
FREIGHT LOCOMOTIVES													
G-45	2-8-0	1901	63 "	4	10	39,500	158,000	180,000	35,700	80-lb.	28.5	700 to 1	6300
G-2	2-8-0	1902	63 "	4	10	43,100	172,500	200,000	37,490	80-lb.	28.5	750 to 1	7000
G-6	2-8-0	1907	63 "	4	10	53,900	215,500	241,500	45,680	100-lb.	48.5	555 to 1	5000
G-46	2-8-0	1911	57 "	4	10	52,000	208,000	236,000	47,330	100-lb.	48.5	535 to 1	4850
H-5	2-8-2	1912	63 "	4	12	53,900	215,500	280,000	46,670	100-lb.	48.5	555 to 1	5800
H-6	2-8-2	1918	63 "	4	12	56,400	225,500	300,500	54,720	105-lb.	50.0	560 to 1	6050
H-10-A	2-8-2	1922	63 "	4	12	62,000	248,000	335,000	*76,190	105-lb.	50.0	620 to 1	6700
H-10-B	2-8-2	1924	63 "	4	12	61,500	246,000	337,000	*74,470	115-lb.	64.0	480 to 1	5250
FAST FREIGHT LOCOMOTIVES													
K-11-A	4-6-2	1910	69 "	3	12	57,350	172,000	266,000	40,040	100-lb.	48.5	590 to 1	5500
L-1	4-8-2	1916	69 "	4	14	60,700	243,000	348,000	54,080	105-lb.	50.0	610 to 1	6950
L-2	4-8-2	1925	69 "	4	14	61,000	244,000	362,500	*73,280	105-lb.	49.8	615 to 1	7300
L-2	4-8-2	1925	69 "	4	14	61,000	244,000	362,500	*73,280	127-lb.	63.7	365 to 1	4350

*Note:- Includes booster tractive effort.

Relationship of New York Central Locomotives to Rail Sections

ment which would probably be idle most of the time. Various forms of hot tops or sink heads have been advocated, and several have been tried in an attempt to improve the setting and solidity of the ingot. Many types of deoxidizers have been experimented with, but with the exception of increasing the silicon content in the steel, these deoxidizers have been generally discontinued.

There is one grade of steel, however, which has been gaining favor quite recently, known as medium or intermediate manganese. Increasing tonnages are being ordered as its advantages become more obvious. Some 30 years ago many thousands of tons of rails were made from material quite similar, which had given excellent service. The steel at that time was made from Lebanon ores, with 0.55 to 0.65 carbon; 1.10 to 1.40 manganese; phosphorus under 0.07, and with a natural copper content of 0.80 per cent from the ore.

One progressive railroad officer who had had considerable experience with this steel revived its use, and others have done likewise. Promising results are now being obtained, except in cases where either extremely soft or hard material is specified. With a carbon content of 0.35 to 0.45 per cent and manganese 1.30 to 1.50 per cent, the rails are too soft, while those rolled with carbon 0.70 to 0.80 and manganese 1.80 to 2.0 per cent have proven to be too hard and brittle. The middle course is the safest, apparently, and with a composition of 0.54 to 0.67 carbon, manganese 1.30 to 1.60 and the other elements remaining unchanged from standard open-hearth specifications, excellent results are reported.

Several manufacturing advantages have been noted, for the steel sets very quiet in the molds, and segregation in the top rails of the ingot is materially reduced, as substantiated by a number of tests. The steel flows freely and easily in rolling without tearing and fewer flaws are encountered in the finished rail. The grain structure is finer in texture, and the steel has greater toughness, combined with more stiffness under the impact of the tup in the drop test. Service tests to date give indications of a reduction in failures, particularly of the interior transverse fissure type. Records of wear on sharp curves on one road indicate several months of increased life before renewal. The flow of the metal crosswise of the head and at the ends is lessened somewhat, which should cause less batter and chipping of rail ends. European practices in rail manufacturing, such as the bottom pouring of ingots and roller straightening, have been advocated, but records of service on their roads are not very convincing proof of their value. Recently published data showed that 21 per cent of the total failures in their service are of the interior transverse fissure type, and that the number of head failures was also large. This is surprising as wheel loads are much lighter in the European countries than here, maximum driving axle loads generally not exceeding 45,000 lb., and freight cars having but a fraction of the capacity of the equipment in the United States.

Weight Has Increased Faster Than Loads

The demand for heavier rails has more than kept pace with the desire for improvement in quality of metal, especially during the past few years. A chart published recently brought out the interesting fact that within 10 years the percentage of rails rolled of 100-lb. sections and heavier has increased from 23 to 61. In adopting a new standard section, an increase of 5 lb. was formerly considered sufficient, but increases of 20 to 40 lb. per yard now being quite common. The eastern roads have centered on a standard of approximately 130 lb. per yard, though there is considerable variation in design between

the different railroads. The 110-lb. R. E. section seems quite popular on the western roads, who formerly used 80- or 90-lb. rails, although in some cases they too have adopted the 130-lb. R. E. section.

The somewhat prevalent idea that the rail section has not kept pace with increases in power and equipment is erroneous. In discussing this point, weight of power is equated against weight of rail, without any mention of the distribution and spacing of the wheel loads or of the mechanical properties of the rail. The relationship of motive power to rail section on the New York Central is brought out in a striking manner in the table. The correct way of studying the value of a rail section is its action under load in distributing the stresses induced by the rolling loads. In the older types of power, the loads were distributed on 8 to 10 wheels, while those of the present time have from 12 to 16 wheels. The important point to be noted is that the ratio of either driving wheel loads or total weight of engine, compared to the moment of inertia of the section has decreased during the 27-year period, which means that the rail section as a girder has a decidedly larger factor of safety to carry the loads under present conditions. In addition the modulus of the track has been materially increased by the installation of stone and other types of ballast of increased depth, better drainage conditions, larger and longer ties, heavier tie plates, and an improved design of joint, together with heat treated splice bars and bolts.

Rail stresses are lower than generally supposed, except on sharp curves or in cases of improperly designed locomotives, particularly in relation to conditions of counterbalancing. Stresses of 60,000 lb. per sq. in. which developed in the 90-lb. section in the low rail of a 10 deg. curve, have been quoted to create the impression that a low margin of safety exists in rails. Such stresses are rare, as the reports of the joint Committee on Stresses in Track show. Careful study of the reports of the committee shows that at operating speeds the average stress for the driving wheels does not much exceed 20,000 lb. for 90-lb. rails, and 15,000 lb. for sections heavier than 100 lb. per yard. The reports are clear in stating that variations from the average are bound to occur, due to irregularities and inequalities as the rolling loads pass over the track, and that this variation is 3,000 to 5,000 lb. over or under the average.

Rail wear is widely discussed, although it is confined largely to curves. On tangent track, except in unusual cases, top wear is of slow progress, except at the rail ends. The loss in head depth in tangent tracks on the New York Central lines is approximately $\frac{3}{32}$ in. in 10 years, based upon a large number of representative measurements.

Some roads have followed the practice of designing their rail sections as though their lines are made up largely of sharp curvature, sacrificing essential features of girder stiffness for increased head depth. Abrasion on curves is a special problem, and can be met by other means than a sacrifice of correct rail proportions. We are meeting the problem with considerable success by adhering to the present rail standards, and compensating by the use of special material. The 10 to 15 per cent water-quenched manganese rail is proving valuable. An increase in life of from 6 to 10 times that of standard open-hearth steel is commonly secured. Another method is the separation of the high carbon rails within the specified range for open-hearth rails and installing them on curves because of their increased hardness and wear-resisting possibilities. Medium manganese is also proving its merit for similar service. The reduction in flange wear on the high side of curves is being accomplished by the use of flange oilers.

Cost Accounting and Its Problems

Because of its intricate character cost system must be developed along independent lines

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UNIFORMITY in the structure of their accounts is recognized as one of the first requisites in the practical regulation of public utilities. In railroad accounting it was made effective when the authority vested in the Interstate Commerce Commission over common carriers was extended to include jurisdiction over the form of accounts. Pursuant to that mandate the commission prescribed in 1907 a system of accounts, with rules and regulations governing the manner in which they were to be kept. The original classifications were revised and extended until they assumed their present complete form, which has been in operation now for over 13 years. The prescribed classifications cover all those accounts comprised in the balance sheet, income and profit and loss statements, and revenues and expenses; in practical accounting terms they represent the general accounting system. The subject of revised account classifications has again come before the commission for its consideration, and there has been submitted to the railroads, a draft of tentative classifications prepared by the Bureau of Accounts which it is proposed should be adopted. The operating expense accounts classification contains in the April, 1927, draft the requirements of the order contained in No. 15100 relating to depreciation charges, and is the latest draft of the expense accounts classification so far submitted.

At the same time there has arisen from various quarters a considerable amount of discussion as to the desirability of designing the expense classification on a cost accounting basis. In the proposed classification of expense accounts, as revised by the Bureau of Accounts, there is no radical departure from the method heretofore used; it is to all intents and purposes devised so as to exhibit the expenses in their primary form—labor, material, supplies and various other kinds of expenses. In some accounts those elements are shown separately and in some others they are combined, depending on the relative importance of the expense items involved. It is true that in certain cases, such as work-train expenses and shop expenses, elements of expense are to be summarized and then distributed to other accounts in accordance with a stated rule, but those might be cited as exceptions which prove the general basis of classification. Apparently, however, the railway accounting officers are opposed to a method which involves allocations and apportionments, even of this elementary character, preferring to adhere to the principle of classification by primary description of the expenses.

Procedure Necessary for Cost Accounting Basis

By a cost accounting classification is meant, presumably, one that is designed to develop and exhibit cost of service; that is to say, a classification showing the costs, for each of the various classes of service, of the different operations involved. Of course, there is a wide range of choice as to what classes of service are to be thus separately shown; it may be proposed to exhibit in this way the two major services—freight and passenger; on the other hand, it may be seriously intended that the

accounting records should differentiate between the various services performed so that there may be shown, under freight service, for example, costs by classes of freight commodities. Rather than attempt to guess at the limits or scope of any contemplated plan, it will be more instructive to make a brief survey of the method of procedure in cost accounting, and to consider it in connection with the railroad problem.

Those who are familiar with the principles of costing know that in order to apply them in practice a study must be made of the business organization; briefly, it is a study which separates the organization into its various departments and discloses their functions, distinguishing between productive and overhead departments, and which separates the operations in each productive department. Production costs are thus finally segregated by operations; they comprise (1) the costs of the productive department directly involved in the operations, and (2) a proportion of the indirect costs of the department assigned to each operation on the most equitable basis, the latter including a ratable portion of overhead department costs. The average unit cost for each operation (based on prices and conditions prevailing at a particular time) can then be expressed in terms of those components—direct costs representing material and labor, and indirect costs representing productive department general costs and overhead department costs. The total cost of the product is determined from the sum of the cost of the different operations involved. The direct cost elements in each operation may also be designated average performance costs, or costs which disclose the efficiency factor in use of material and in hours of labor consumed, prices being reduced to certain fixed standards.

It will be evident from the foregoing that average unit performance costs, representing the directly assignable costs—whatever elements may be included therein—are real and not theoretical. They comprise those elements which are determined without having recourse to methods or theories of apportionment, and consequently are not open to criticism or question on that account. When presented in the form of indices of performance as above described, they are of great practical usefulness to operating officials. It should be noted, however, that the costs of certain departments usually regarded as not directly employed in the handling of the product, may be exhibited as a secondary system of average performance costs. Thus, the consumption of coal per 1,000 kilowatt hours produced in a power plant, which serves several departments in a factory, is an index of efficiency in power production.

For railroad purposes then it will be necessary to segregate costs and the related statistics under the various service operations. What costs are to be represented, however, is a question which demands first consideration in order that a clear understanding may be reached as to their use and purpose. Cost of service, it must be kept in mind, is not the controlling factor in determining the reasonableness of the rates charged

for the service; this is perhaps more true in railroad economics than is the case in a manufacturing industry, but the difference is only one of degree. The percentage of gross profit on various lines of product manufactured in the same plant may vary considerably on account of market conditions or other circumstances; but so long as the less profitable lines contribute some margin to absorb general selling and administrative costs which otherwise would be borne entirely by the more profitable products, the net income available as profit to the owners is increased by the amount of such margin. In those circumstances it would be misleading to distribute general selling and administrative costs uniformly among products, when prices are adjusted to secure the greatest possible volume of business at a satisfactory total profit. As a matter of fact in the large majority of cases, "cost accounting" for the industries goes no farther than factory cost of production. And as a general rule it may be said that in furnishing reliable production costs, supplemented by data pertaining to direct selling and other specific costs attributable to the product, cost accounting has fulfilled its function, as far as it can practically proceed, in furnishing definite information bearing on the problem of individual prices.

Segregation of Direct Costs of Service Operations

In order to determine whether or not a rate charged for the transportation of freight or passengers is less than "reasonably compensatory," it is at least necessary to know whether such rate yields a margin over and above the costs directly involved in rendering the service, or whether it fails to meet those costs. Opinion may be diverse as to where the line should be drawn in classifying costs either as directly or indirectly incurred in service operations, but it probably would be conceded that traffic and general administrative expenses, taxes, rents, and return on investment are all indirect costs in the sense above described. On this view direct costs would be embraced entirely in the transportation and maintenance classifications of expenses. The latter includes depreciation which is an indirect cost in so far as the expense is based upon a consideration of factors other than wear and tear resulting from use. And since depreciation expense is usually charged to operations in equalized monthly installments it may be classed as a non-varying and indirect cost. Supervision and other general expenses of the operating department might also be regarded as indirect costs since they do not apply to any particular operation; but if it were considered proper to include those expenses as direct costs it would be necessary to distribute them over operations on some approved basis. According to the above classification we would have as direct costs the labor and expenses of operating department forces, fuel, power, repair material, tools, supplies, and other items of expense necessary in the conduct of the operating department. Those are the costs which, together with the related statistics, it appears would have to be segregated under the various service operations.

Any segregation of direct costs into service operations would necessarily have to be made along departmental lines as previously indicated. In the uniform system of accounts the maintenance expenses are rigidly separated from other operating expenses. This is in line with the principle followed in all public utility accounting systems; it is also in line with the general practice of the railroads which places responsibility in a separate department under officials charged with the duties of supervising and controlling maintenance expenditures. Hence the costs would be shown under three main heads as in the present uniform system of accounts—transporta-

tion expenses, repairs to way and structures, and repairs to equipment. The operations of the transportation department may be divided into three main functions—operation of trains, operation of yards, and operation of stations. There are, of course, secondary operations such as operation of fuel and water stations, operation of general power plants (if any), and operation of enginehouses, which have to be distributed over the principal operations affected. There are also those other operations such as signal and interlocker operation, crossing protection, and drawbridge operation which may or may not have to be similarly apportioned. With regard to repairs to way and structures and repairs to equipment it may be said that, without discussing them in detail, the natural segregation for those costs is as follows—(1) way and structures, repairs to roadway and roadway structures, repairs to yard tracks and structures, repairs to station structures and appurtenances; and (2) equipment; repairs to train equipment, repairs to yard equipment. Other repair accounts under either of these two main classifications must be resolved into one or other of the segregated classes of repairs.

Segregation of Costs Should Be Based on Fact

The segregation of the direct costs under the above principal divisions follows the natural lines along which the operations of the departments are conducted. But in the division of transportation costs, operation of yards covers only those costs pertaining to yards where regular switching services are performed; consequently we must determine what proportion of the cost of operation of trains is attributable to intermittent switching at other yards. Again, in the division of repairs to equipment we find that road operations and yard operations are both accountable for repairs to train locomotives and car equipment; hence it will be necessary to distribute those repairs between the two kinds of service operations. It is by no means a simple problem that we are confronted with here; several formulas have been developed for the purpose of separating costs common to train (line-haul) and yard (switching) operations between those two service operations, but none can be cited as that which has been formally accepted or sanctioned by authority. There is a similar problem attaching to station costs, in which are combined (in some cases merged imperceptibly) the costs of two quite distinct service operations—(a) office and clerical operations, and (b) loading, unloading, and handling of commodities, baggage and merchandise. In both cases some authoritative basis of separation would have to be forthcoming before any results could be incorporated in the official records of the railroads. But we must now recognize that in thus attempting to classify completely all costs into service operations, so as to lay the basis for determining costs for various classes of service, we are obliged to introduce into the accounts theories of apportionment, or distributions based more or less upon speculative hypotheses. Now it may be quite legitimate and probably necessary, in the preparation of independent studies showing costs of service, to employ arbitrary methods in analyzing common costs; but the accounting record, upon which are based the published accounts of the railroads, should in all respects represent an exhibit of facts, the integrity of which is unimpaired by any modifications based upon theoretical formulas.

Freight-Passenger Separation

With respect to the segregation of direct costs between classes of service, it is quite within the realm of practical railroad accounting to separate certain items of cost, together with the associated statistics, into the

two major services—freight and passenger. This is especially true of a large part of the expenses of the transportation department. A separation of this kind—conforming to the working conditions of the railroads—is of great practical value in facilitating the observation of average performance results individual to operations in those two respective services. In 1920, the Interstate Commerce Commission issued rules governing the separation of operating expenses (not including taxes and rent deductions) between freight service and passenger service. Under those rules sub-accounts must be provided to classify the expenses according as they relate solely to one or the other service, or to both services in common, or to other services not affecting either freight or passenger service. Expenses common to both services are apportioned in accordance with rules prescribed in the order, and the results of such apportionment are to be shown by primary accounts in the annual reports to the commission. It will be noted that the order did not require the complete separation to be incorporated into the accounting records of the railroads. Nevertheless it is more than probable that the freight-passenger separation is regarded by the proponents of a cost accounting classification merely as a first step toward the ultimate creation of a manual of rules making such a classification effective—whatever may be its scope and form. Unfortunately for those good intentions it appears that the separation as it now stands, based on the order above described, is far from the final state required for costing purposes; for the costs assigned to either service still include items which are chargeable to the other, and which are by no means negligible. The costs assigned directly or indirectly to freight service, for example, include transportation, switching and other terminal operations affecting large quantities of material for construction and maintenance, as well as fuel and supplies of all kinds which are known as "company freight," used in the operation of both freight and passenger services. Unless arbitrary costs are to be assigned by each railroad for such company freight, it will be necessary to determine the costs of the different operations involved each month in order to evaluate the amount to be apportioned finally to each service. The method of arbitrary costs may be dismissed as certain to be condemned; hence there is no alternative but to develop a complete system of costs for non-revenue freight before we can secure a satisfactory distribution of costs between the freight business and the passenger business respectively.

Would Segregated Monthly Costs Be Representative

This brings up the larger question as to the purpose in view which would necessitate the determination of cost of service by classes each month in the accounting records of the railroads. So far we have seen that it involves considerable analysis and theoretical apportionment to obtain costs attributable respectively to freight and to passenger business under the principal service operations—line haul, switching, office work, and station handling—to say nothing of costs of service by classes of commodities. It cannot be that the purpose is to develop unit costs by classes of service each month for transportation or for switching or other operations, for it is easy to demonstrate that unit costs so determined are not representative, because of variances due to fluctuating volume of traffic. It may be intended that the derived class costs with their associated statistics are to be made cumulative over a period of duration sufficient to produce representative average unit costs. But this is to admit that an elaborate system of apportionments would be put into operation in the accounting records

each month when they might quite well be covered by a general apportionment elsewhere as in the case of the freight-passenger service apportionment reported annually to the Interstate Commerce Commission.

The only conclusion tenable in the circumstances is that it is not practicable to reconstruct the general accounting system of the railroads so as to develop and exhibit costs by classes of service. There must be a cost system designed for that purpose with its foundations laid deep into the fabric of the detail accounting and statistical transactions, which means that it must have its origin in the divisional organization of each road; and on account of its intricate and complex character it must be developed along independent lines. However, before any outline of procedure is attempted in that direction, it would be instructive to study recent developments in cost accounting in other industries, and to compare the cost problems of the railroads with those of manufacturers and of other utilities.

Train Control Installations on Big Four and L. & N. Approved

WASHINGTON, D. C.

THE Interstate Commerce Commission, Division 1, on December 2 issued reports approving, without exception, the installation of the General Railway Signal Company's auto-manual train-stop system on four miles of the Knoxville division of the Louisville & Nashville and also the Union Switch & Signal Company's automatic train-stop system on the New Orleans and Mobile divisions, from Mobile, Ala., to New Orleans, La., 136 miles.

At the same time Division 1 approved, with exceptions, the installations of the General Railway Signal Company's auto-manual train-stop system on the St. Louis division of the Cleveland, Cincinnati, Chicago & St. Louis, from Mt. Jackson (Indianapolis), Ind., to Mattoon, Ill., 126 miles, and from Mattoon to Lenox, Ill., 109 miles.

The installation on the Knoxville division of the Louisville & Nashville is from Holton, Tenn., to Lot, Ky., and the report says the arrangement is unique in that two systems, a two-speed continuous inductive automatic train-control system operating in connection with L. & N. locomotives and an intermittent inductive auto-manual train-stop system operating in connection with Southern locomotives, are installed and function independently of each other.

The cost of the installation between New Orleans and Mobile, as reported by the carrier, is as follows:

(1) Roadside Equipment	
(a) Total cost of roadside equipment of train stop installation, less power lines and power apparatus, and less cost of signals; less salvage.....	\$125,528.64
(b) Total cost of power lines and power apparatus, less salvage	78,506.86
(c) Total cost of changes in existing signal system made necessary by train-stop; less salvage.....	None*
(d) Total all other roadside equipment costs.....	4,705.43
(e) Total cost of roadside installation.....	\$208,740.93
(2) Locomotive Equipment	
Total cost locomotive equipment installed on 44 locomotives	92,041.61
Total cost of train-stop installation.....	\$300,782.54
(3) Signal System	
Total cost of signal system installed in connection with train-stop	523,195.54

*Signals (semaphore) were installed in connection with train-stop.

The report on the New Orleans-Mobile section contains various requirements as to maintenance inspection, etc.—nine paragraphs: Periodical inspections should be more consistently carried out; testing for elimination of

grounds was found necessary; certain crosses and line wires called for criticism; the recurrent acknowledgment features should be carefully adjusted to the customary speed; crossings of four other railroads were without detector circuits, needed to protect against a train of the transverse railroad standing on the crossing.

On the Knoxville division, certain requirements are set forth in five paragraphs: double-heading cocks and automatic brake valves are criticized; receivers and inductors were found out of adjustment; signal maintainers need more complete instructions.

The Big Four.—The cost of the installation under the first order of the commission, from Indianapolis to Mattoon, is reported as follows:

Roadway Equipment

Total cost of roadway equipment of train-control installation, less power lines and power apparatus, if any, less cost of signals or cost of change in existing signal system; less salvage	\$64,277.22
Total cost of power lines and power apparatus, if any, less salvage	None
Total cost of signal system installed in connection with train-control; less salvage	\$184,369.20
Total cost of change in existing signal system made necessary by train-control; less salvage	None
Total cost of roadway installation	\$248,646.42
Locomotive Equipment	
Locomotive equipment installed, 74 locomotives	\$98,214.79
Gasoline-operated passenger car equipment installed	1,358.00
Total cost locomotive equipment	\$99,572.79
Total cost of installation	\$348,219.21

The exceptions, which also apply to the second installation, are:

1. The reset contactor must be so located * * * as to require that the locomotive be brought to a stop before release can be effected. This was not the case at the time of the inspection.
2. Locomotives operated backward in road service must be equipped with the train-stop device for such movements. Some were not so equipped at the time of the inspection. * * *
3. (a) Non-equipped locomotives must not be operated unless double-headed, etc.
(b) Locomotives must not be run in road service from terminals in train-stop territory with the device cut out unless double-headed, etc.
(c) When necessary to operate locomotives with the train-stop device cut out, special protection must be provided, etc.

Requirements and recommendations in this report fill 16 paragraphs. On double track, trains are freely run against the current of traffic, often at high speed, and it is therefore suggested that complete signaling for these reverse movements is called for. The inspectors found grounds in certain locomotive apparatus; double-heading cocks not properly arranged; automatic brake valves not accurately adjusted; relays on 16 locomotives found not sealed. Certain electro-pneumatic valves ought to be re-located so as not to be exposed to dirt and water. Wires carried in single-groove trunking call for greater care than would be necessary if carried separately in double-groove trunking. Criticisms are offered concerning inductors at locomotive terminals; dwarf signals used as starting signals on single track; track-circuit locking at certain grade crossings; lack of overlaps at certain points and inadequate fouling protection at cross-overs. Attention is called to regulations on other lines in the New York Central system which are believed to be better than those in force here.

The cost of the installation under the second order is reported as follows:

Roadway Equipment

Total cost of roadway equipment of train-control installation, less power lines and power apparatus, if any, and less cost of signals or cost of change in existing signal system; less salvage	\$59,451.40
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Total cost of power lines and power apparatus, if any, less salvage	None
Total cost of signal system installed in connection with train-control, less salvage	170,527.11
Total cost of changes in existing signal system made necessary by train-control; less salvage	None
Total all other roadway equipment costs, if any	None
Total cost of roadway installation	\$229,978.51
Locomotive Equipment	
Total cost of locomotive equipment installed, (15 locomotives)	\$19,266.80
Total cost of installation	\$249,245.31

The 74 locomotives equipped under the first order also operate over this territory and 31 locomotives of the Chicago & Eastern Illinois equipped with a composite type of the General Railway Signal Company's system operate over a portion of the territory.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended November 26, which included the Thanksgiving Day holiday, amounted to 840,803 cars, a decrease of 97,041 cars from the corresponding week of last year and of 82,403 cars as compared with 1925. Grain and grain products was the only commodity classification which showed an increase over a year ago. Coal loadings declined 75,112 cars and ore 3,674 cars from the corresponding week of 1926. Loadings in the Northwestern district were larger but in all other districts were smaller than a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Districts	WEEK ENDED SATURDAY, NOVEMBER 26, 1927		
	1927	1926	1925
Eastern	180,768	210,004	203,154
Allegheny	168,181	201,264	184,102
Pocahontas	45,210	61,590	56,548
Southern	135,122	146,618	146,881
Northwestern	105,068	102,908	109,447
Central Western	131,332	135,784	142,496
Southwestern	75,122	79,676	80,578
Total West, districts	311,522	318,368	332,521
Total all roads	840,803	937,844	923,206
Commodities			
Grain and grain products	42,645	38,911	48,780
Live stock	28,175	29,367	29,660
Coal	152,765	227,877	172,239
Coke	9,260	12,720	14,960
Forest products	55,939	59,206	65,108
Ore	10,820	14,494	15,536
Mdse. L. C. L.	226,072	229,102	232,522
Miscellaneous	315,127	326,167	344,401
November 26	840,803	937,844	923,206
November 19	968,103	1,071,707	1,057,923
November 12	974,862	1,106,889	1,049,940
November 5	1,038,852	1,131,832	1,062,646
October 29	1,112,621	1,208,878	1,091,154
Cumulative total, 48 weeks	48,282,045	49,349,988	47,523,818

The freight car surplus for the period ended November 23 averaged 301,393 cars as compared with 251,644 cars November 15. The total included 135,619 box cars, 126,934 coal cars, 17,819 stock cars and 9,075 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 26 totalled 80,633 cars, an increase of 3,213 cars over the previous week and an increase of 4,590 cars over the same week last year.

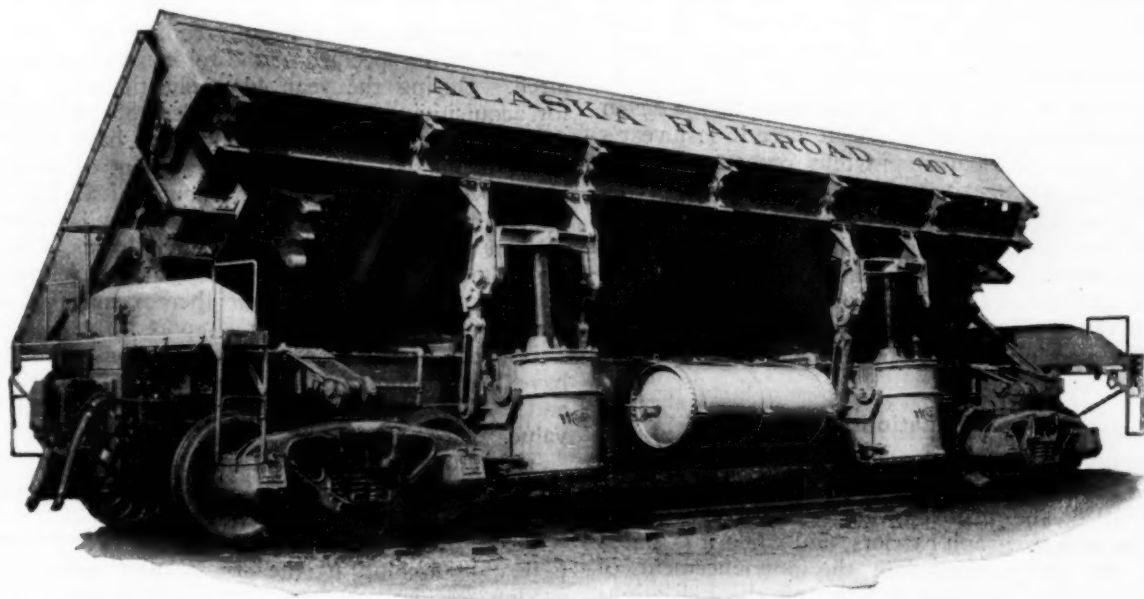
Commodities	Total for Canada			Cumulative totals to date	
	Nov. 26, 1927	Nov. 19, 1927	Nov. 27, 1926	1927	1926
Grain and grain products	23,645	21,390	19,380	452,586	454,310
Live stock	3,774	4,348	2,933	112,051	106,665
Coal	9,592	8,182	10,024	330,785	291,114
Coke	456	488	435	17,099	17,871
Lumber	3,184	2,781	3,528	176,005	171,670
Pulpwood	1,348	1,003	1,469	135,192	119,201
Pulp and paper	2,356	2,450	2,078	104,344	111,537
Other forest products	3,494	2,749	2,945	143,184	144,643
Ore	1,551	2,058	1,521	80,722	82,849
Merchandise, L. C. L.	17,749	17,540	17,412	810,556	775,100
Miscellaneous	13,484	14,431	14,318	709,604	680,859
Total cars loaded	80,633	77,420	76,043	3,072,128	2,955,819
Total cars received from connections	33,822	33,029	36,449	1,759,417	1,759,934

A Dual Side-Pivot Drop-Door Air Dump Car

THE Western Wheeled Scraper Company, Aurora, Ill., has developed and placed on the market a new low loading drop-door dump car of the side-hinge type, which is designated as the Western Dual-Pivot Drop-Door dump car and which has been designated to meet the special problems encountered in open pit mining or similar operations as well as in maintenance of way work.

The car is provided with side pivots or trunnions spaced at sufficient distances to eliminate the necessity of locking mechanism. The car body can be dumped to either side to an angle of 50 deg. from the horizontal and as the car is tilted the doors, which form the sides of the car body, turn downward to form an apron to prevent the material falling too close to the track. When the car is in the dumped position the edge of the door is 4 ft. 8 in. from the rail. The insides of the doors and

car is tilted and thereby reducing the necessary consumption of air. It is said that the center of gravity of a uniformly distributed load of 100,000 lb. is raised only $6\frac{1}{2}$ in. during the dumping operation, reaching its highest point when the car body has been tilted 27 deg. Tests have shown that capacity loads were dumped with an effective pressure of from 45 to 52 lb. in the air cylinders and that the pressure decreases to less than 20 lb. during the latter part of the travel. The dumping is accomplished gradually but continuously and in these tests the load was completely discharged in from four to five seconds. The construction of the body is strong and rigid. The draft sill is made up of two 65-lb. I-beams with $\frac{1}{2}$ -in. cover plates on both the top and bottom, and $\frac{1}{2}$ -in. 30-lb. channels are used for the side sills. The cross sills are 8-in. I-beams closely spaced and fastened securely to the side sills, and rest directly on the



Western Dual Side Pivot Drop Door Dump Car Built for the Alaska Railroad

the ends of the cars are sloped to facilitate the discharge of the material.

Dumping is accomplished by two single-stroke cylinders on each side of the car, which exert full pressure on the car body until it has reached an angle of 34 deg. from the horizontal, when a link arrangement operates automatically to push the car body to the full dumping angle of 50 deg. The cars are provided with enamelled air storage reservoirs of sufficient capacity to dump the cars without relying on additional air from the locomotive and the piping arrangement is such that the cars can be dumped to either side, singly or in multiple.

When the car is being dumped the body rotates around six pivots until it has reached an inclination of approximately 40 deg. from the horizontal. At this point the load is transferred to two outer pivots at the bolsters, causing the car body to right itself as soon as the air is released from the dumping cylinders. The inner pivots are set nearer the center of the car than is usual with this type of construction and are placed low, thus causing the center of gravity to follow a flattened curve when the

draft sill when the car body is in its normal position.

The doors are formed of double plates, connected with ship channels at the top and bottom, with vertical diaphragms at all hinge points. When the doors are turning downward a constant clearance is maintained between the curved floor plate and the bottom of the door so that material will not lodge in this joint and prevent the righting of the car body.

The operation of the doors is controlled automatically by a system of levers located at each end of the car. The levers are enclosed to prevent fouling by material dropping from shovel dippers or loading buckets and the mechanism is designed to prevent injury in the event that the down-turning door strikes any dumped material along the track. The doors have ample strength to plow through dumped material without being damaged.

A number of these cars, of 25-cu.-yd. capacity, have been placed in operation at the Oxwell mine on the Mesaba iron range and more have been ordered. Similar cars of 30-cu.-yd. capacity, have been installed on the Alaska railroad.

I. C. C. Annual Report

WASHINGTON, D. C.

THE Interstate Commerce Commission's recommendations for amendment of the consolidation and valuation sections of the interstate commerce act are reiterated in its annual report to Congress made public on December 8 in the same form in which they have been made in previous reports. The commission urges the omission of the present requirement that it adopt and publish a complete consolidation plan, and that it be given broad powers, upon application and after hearing, to approve or disapprove such consolidations, acquisitions of control, mergers or unifications in any appropriate manner as may be proposed to it voluntarily. Specific authority to disapprove a consolidation or acquisition upon the ground that it does not include a carrier which ought to be included which it is possible to include upon reasonable terms, is one of the provisions which the commission believes should be included in such legislation.

The proposed amendments relating to valuation are those which it has previously suggested, to make more specific the instructions of the law as to bringing its primary valuations down to date, a work which it is now ready to undertake, and to clarify section 15a so as to afford a practical basis for recapture purposes pending the determination of final values.

These two recommendations are included in the seven made by the commission, all of which were in last year's report and some of them in previous reports.

"Pending needed legislation," the report says, "the situation as to consolidation of carrier property under paragraphs 4 to 6 inclusive of section 5, as summarized in our last report, remains unchanged. Meantime the process of unification through acquisition of control by carriers of other carriers under paragraph 2 of section 5 has been continuing, as appears elsewhere in this report."

Valuation

Satisfactory progress is being made, the report says, under the three-year program designed to complete by June 30, 1928, the primary valuations of the steam, sleeping-car and telegraph carriers, and while it is stated that this not not contemplate the announcement of final conclusions in all cases by June 30, the indications are said to be favorable for early disposal of cases which may not be decided by that date. The work of primary valuation being so near an end, the commission's staff is being organized for the work of bringing the valuations down to a later date. Service of all tentative valuation reports as to steam railroads has been completed, 1,047 reports in all, and final valuations have been reached in 610 cases, covering 52,604 miles, or 21.61 per cent of the total mileage. Hearings on protests of tentative valuations have been concluded in 597 cases, representing 68.01 per cent of the total mileage, protests have been partially heard in 92 other cases, and hearings in all others where protests had been filed had been set for November and December. The plan of procedure by formal conference in valuation matters has been followed in the presentation of numerous cases and is believed to have been of material assistance in expediting the disposition of many issues.

After a review of the O'Fallon recapture case the report says that "if approved by the courts, it is thought by the majority that the method of valuation adopted in this case will be practicable and workable in the ad-

ministration of the recapture provisions and will produce results just and fair to the carriers and the public."

Formal complaints filed during the year ended October 31 numbered 1,561, the commission decided 1,088 cases, and 358 cases were dismissed, making a total of 1,446 cases disposed of as compared with 1,327 during the previous period. Sixteen hundred hearings were conducted, which produced 291,299 pages of testimony. Approximately 35 per cent of the formal complaints are now handled by the "shortened procedure" method, under which the average elapsed time to reach a decision has been 472 days from date of receipt of complaint and 266 days from date of receipt of the final memorandum.

Bureau of Finance

In connection with the activities of the Bureau of Finance, the report shows that 39 certificates were issued authorizing 1,027 miles of new construction, 52 authorizing the abandonment of 830 miles, and 42 authorizing operation or acquisition and operation of 2,809 miles. Ten applications for authority for 593 miles of new construction, and 6 applications for authority for the abandonment of 106 miles, were denied. Since the effective date of the law giving the commission jurisdiction over new construction and abandonments it has authorized the construction of 6,445 miles, of which 3,112 miles have been actually constructed, while as to 2,943 miles the specified period for completion has not expired. During the year 44 applications for authority for acquisition of control were filed, 55 such authorizations have been issued, 3 applications have been denied and 1 dismissed. Payments on account of excess earnings have been made to the amount of \$7,140,930, the bulk of them under formal protests and reservations. "When values shall have been fixed by us," the report says, "the number of carriers found to have earned excess income and the amount thereof may differ from the results shown in carrier's reports."

Issuance of securities and assumptions of obligations have been authorized to the amount of \$1,157,368,222 and 303,717 shares of stock without nominal or par value.

The total includes \$339,853,584 par value of stock, \$651,991,396 of bonds, \$40,479,742 of notes and \$92,902,500 of equipment obligations.

Certificates to the amount of \$526,887,109 have been issued on account of the six months' guaranty under section 209, leaving 12 claims pending, which it is estimated will require \$830,000. In addition the commission had certified as advance and partial payments in the 12 unsettled cases a total of \$3,005,510. During the year \$38,311,986 was repaid by carriers on account of loans under section 210.

The Bureau of Locomotive Inspection reports that the percentage of steam locomotives found defective decreased from 40 per cent in 1926 to 31 per cent during the year covered by this report, ended June 30, and there was a decrease of 14.9 per cent in the number of accidents occurring in connection with steam locomotives. The Bureau of Safety reports that approximately 1,430,000 cars and locomotives were inspected. The number of defects per 1,000 inspected was 32.76, as compared with 40.02 for the preceding year.

The Bureau of Signals and Train Control Devices says that the replies to the questionnaire addressed to the roads in July in connection with the investigation concerning automatic train-stop and train-control devices and signals are being tabulated for study and that the proceeding will be assigned for hearing in due course.

Rates

In connection with the work of the Bureau of Traffic the report says that continued progress is being made toward securing a more unified rate structure through the medium of various rate investigations embracing as to certain territories the rate structure generally or particular descriptions of traffic. A section of the report is devoted to the Hoch-Smith resolution, under which there are now in progress or about to begin eleven separate inquiries as part of the general rate structure investigation, covering class rates or important commodities or commodity groups. This plan will be extended to embrace other important commodities as rapidly as possible with the appropriations and forces at the commission's command. The inquiries already in progress, together with the handling of current formal complaints, are taxing the present forces to capacity, the report says.

Another section is devoted to the class rate readjustments. The revision of interstate class rates within the southern territory and most of the class rates between that territory and official classification territory on the north, as prescribed in the report on the Southern Class Rate Investigation, with various later modifications, is nearing completion and it is anticipated that the new rates will become effective not long after the first of the year. The commission is confident that the new rates will represent "important and marked progress toward a harmonious, stable and comparatively simple rate structure." "Of equal and in some respects greater importance," the report says, is the report in Consolidated Southwestern Cases, embracing class and many commodity rates in and to and from the Southwest, in which the adjustment like that in the South, is based largely on distance, although grouping is employed in the case of the longer-distance rates. It is stated that this "will greatly simplify a rate structure which has been among the most unsatisfactory in the whole country" and that "the principle, perhaps not wholly new but never before so extensively employed, has been followed of relating commodity rates to the class-rate structure by basing them on various percentages of the firstclass rates." In a similar proceeding, Eastern Class Rate Investigation, embracing all the interstate class rates within official territory, the proposed report is soon to be served.

Reports have been made and published during the year in 11 investigations instituted on the commission's own motion, and 26 are listed as some of the more important of those pending.

Motor Transport Investigation

In connection with the investigation of motor-bus and motor-truck operation, which it had been expected would be made the subject of a report to Congress at the beginning of the session, it has been deemed advisable that a proposed report be prepared by an examiner and served upon the parties to the proceeding, thus affording opportunity for the filing of exceptions thereto, to be followed by oral argument before the commission and a report to Congress with its recommendations "as speedily as may be consistent with the nature and importance of the subject."

During the past year laws were enacted in four states providing for the regulation of motor vehicles, so that there is now some form of regulation or control over common-carrier motor vehicles in 42 states and the District of Columbia, the report says, and "the rapidly increasing use of motor buses and motor trucks makes the absence of any regulatory control over those engaged in interstate commerce a problem of constantly increasing importance."

The report relating to the Bureau of Accounts says that accounting examinations necessitated by the requirements of section 15a continue practically to monopolize the service of the field force of the bureau. All the back work of this nature has been completed and during the year 732 examinations under section 15a were made. A substantial number of the field accountants has been engaged in an elaborate study of the cost of refrigeration service on fruits, vegetables, melons and berries from the south.

No general examinations of carriers' accounts were made during the year. This part of the work has been omitted for the past few years. "We have thus been compelled," the report says, "except to the limited extent that these special examinations serve the same purpose, to forego the policing of carriers' accounts, an important part of our duties under section 20 of the act. Adequate appropriations are indispensable if we are to perform properly the duties imposed on us by section 20 and make the special accounting investigations which are frequently required by other phases of our work."

Reference is also made to the depreciation order and it is stated to be the "intention to have the accounting classifications, as revised, become effective with the date of any depreciation order that may finally be entered."

Railway Earnings and Efficiency

In commenting on railway earnings the report refers to the falling off in both gross and net revenues beginning with June. As to 1926 it says:

"In 1926 the steam railways had a net income after fixed charges of \$883,625,820, substantially larger in dollars than that of any preceding year. This sum was 9.44 per cent of the capital stock actually outstanding at the close of that year. In 1926, 69.12 per cent of the stock of the steam railways was in the dividend-paying class. This figure is higher than for any preceding year. The amount of dividends declared, including intercorporate dividends, was \$473,603,482, which sum was 5.06 per cent of all stock actually outstanding. The average rate declared on dividend-yielding stock was 7.32 per cent."

In connection with the work of the Bureau of Statistics the report says in part:

Although the mileage of steam railway lines in the United States declined somewhat in the decade ending with 1926, the length of second and additional main tracks increased 21.4 per cent, and the miles of yard track and sidings increased 17.3 per cent in the same period. In this decade the number of locomotives increased only slightly, but the average tractive power per locomotive increased 26.5 per cent. Similarly, the number of freight cars (not including privately owned cars) increased only from 2.3 millions to 2.4 millions in 10 years, but the average capacity of freight cars was 45 tons in 1926 as compared with 40.9 tons in 1916. The increase in the average number of tons per loaded freight car was less than the increase in capacity, having been 24.98 tons in 1916 and 27.35 tons in 1926. But the number of loaded cars per train increased to such an extent that the number of tons of revenue freight per train was 701 in 1926 against 560 in 1916, an increase of over 25 per cent in 10 years.

The amount of tonnage originated by the steam railways in 1926 was 1.44 billions, as compared with 1.32 billions in 1916, then a record tonnage, an increase of 9.1 per cent in a decade. But the average ton of 1926 was carried about 33 miles farther than in 1916, and consequently the ton-miles show an increase in this period of 22.2 per cent. With the increased trainload it was possible to carry the increased ton-miles of 1926 with a smaller number of freight train-miles than were run in 1916. The number of passengers carried in 1926 was 16.6 per cent less than in 1916, but the average journey in 1926 was 7.2 miles longer, and consequently the number of passenger-miles in 1926 stood a little above the 1916 figure.

The statistics of railway accidents show a decided tendency in the direction of greater safety. Over a long period of years the improvement is striking. So recently as 1917 the number of railway fatalities was over 10,000. In 1926 the corresponding

number was about 7,000. The number of railway accidents fluctuates to some extent with the volume of business done, but if a comparison is made between the figures for 1926 and 1923, two recent years of large traffic, it appears that the safety efforts of the railways are making themselves felt.

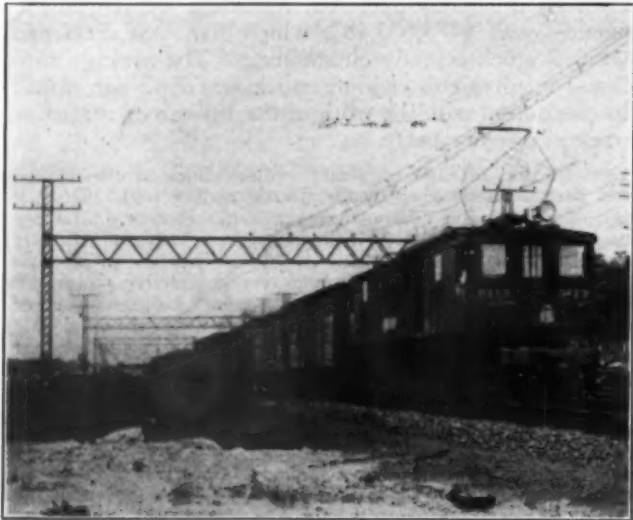
Operation of Motor-Generator Locomotives on the New Haven

THE locomotives built for the New York, New Haven & Hartford by the General Electric Company and the American Locomotive Company and put into service in the summer of 1926, have demonstrated what can be expected of this type of locomotive in service not influenced by heavy grades. There are now in operation a total of seven locomotives of the motor-generator type, five of which are used in freight service between New York and New Haven, Conn., and two in switching work at the Oak Point yard. All are equipped to operate from a single-phase trolley only, as they are not used in the direct-current zone where this company has trackage rights.

Operating Results

Because of the extremely flexible voltage control of the main generator it is possible to start and accelerate a train smoothly and uniformly. For the same reason there is also little tendency for the wheels to start slipping whenever the locomotive is working at high adhesions.

The use of the shunted field positions in the eighth and ninth notches of the controller gives high running speeds, and for this reason the locomotives are employed on manifest freight trains. Because of the fact that the speed is practically independent of the trolley voltage the running time on the road is uniform. It has



One of the Road Engines in Service

also been found that the leading current drawn by the synchronous motor is favorable as regards power factor.

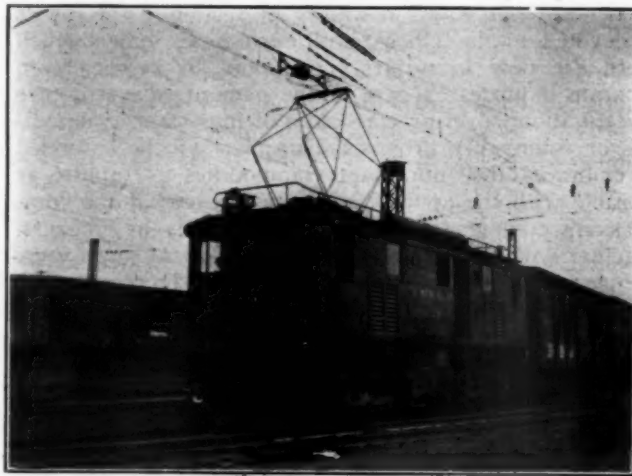
The switchers have been in service on various kinds of work in the Oak Point Yard at New York. Here on account of the weight on drivers, the characteristic of quick acceleration has been an advantage, where it is necessary to make a large number of short, finely controlled movements.

In general, the operating department considers that

the equipment fits into service requirements satisfactorily.

Mechanical Design

The general design of these locomotives is similar to that of the equipment already in use. The wheel ar-



One of the Switches

angement of the freight engine is 1-B+B-1 and that of the switcher B+B.

The principal data and dimensions of these locomotives are given in the table.

	Freight	Switcher
Type of locomotive.....	11,000 V. 25 Cycle	Single Phase M-C Set
Length overall	53 ft. 2 in.	38 ft. 3 in.
Width over cab.....	9 ft. 10 in.	10 ft. 0 in.
Height, trolley locked down.....	14 ft. 10 in.	14 ft. 8 in.
Total wheel base.....	39 ft. 0 in.	25 ft. 0 in.
Rigid wheel base.....	8 ft. 3 in.	8 ft. 3 in.
Total weight	280,000 lb.	211,000 lb.
Weight on drivers.....	220,000 lb.	211,000 lb.
Weight per driving axle.....	55,000 lb.	52,750 lb.
Weight per guiding axle.....	30,000 lb.	.....
Diam. of driving wheel.....	42 in.	42 in.
Diam. of guiding wheel.....	36 in.	.....
Number of driving motors.....	4	4
Total output (Cont. rating).....	1,120 Hp.	440 Hp.
Tractive effort (Cont. rating).....	17,100 lb.	14,500 lb.
Speed (Cont. rating).....	24.6 m.p.h.	11.4 m.p.h.
Total output (One hour rat.).....	1,350 Hp.	500 Hp.
Tractive effort (One hour rat.).....	24,800 lb.	23,200 lb.
Speed (One hour rat.).....	20.4 m.p.h.	8.1 m.p.h.
Tractive effort (Starting).....	66,000 lb.	63,300 lb.

Control of Railroads by Industries Under Investigation

WASHINGTON, D. C.

THE anti-trust division of the Department of Commerce "has advised and is at present assisting and collaborating with the Interstate Commerce Commission in connection with several investigations now being made by the commission with respect to alleged violation of the commodity clause by common carriers which are owned and controlled, through ownership of capital stock, by large industrial and manufacturing corporations," according to the annual report of William J. Donovan, assistant to the Attorney General, in charge of the anti-trust division, which is included with the annual report of the Attorney General. "The investigations are being conducted," the report says, "with a view to the institution by this department of such proceedings as may be deemed necessary to effect compliance with the commodities clause." The report adds the following as to the commodity clause and also as to the Elkins act:

The Commodity Clause

In the *Tap Line* cases (234 U. S. 1, 27) the Supreme Court held that by the enactment of the commodity clause (sec. 1 (8), interstate commerce act) Congress "sought to divorce transportation from production and manufacture and to make transportation a business of and by itself unallied with manufacture and production in which a carrier was itself interested"; and in *United States v. Reading Company* (253 U. S. 26, 60) that "the purpose of the commodity clause was to put an end to the injustice to the shipping public, which experience had shown to result from discriminations of various kinds, which inevitably grew up where a railroad company occupied the inconsistent position of carrier and shipper."

In recent years industrial and manufacturing corporations have acquired ownership or control of numerous railroads, comparatively small in size, but important, nevertheless, because of their strategic locations and the large volume of interstate traffic hauled by them. While operating as and enjoying all the privileges and powers of common carriers, generally speaking, these roads are but mere departments of the industrial corporations which own or control them and whose traffic is transported by them. The statute does not forbid the ownership of the roads by corporations, yet the evils of discrimination and preference resulting from such ownership are equally detrimental as when the carrier owns the manufacturing or producing company.

Amendment of the commodity clause was recommended in the annual reports for the years 1910 to 1917, and a bill for this purpose was introduced before the Sixty-third Congress, third session (H. R. 20470).

The Elkins Act

The Elkins Act (32 Stat. L. 847), as amended by the Hepburn Act (34 Stat. L. 584), renders it unlawful to give or receive rebates, concessions, or discriminations in respect to the transportation of property in interstate commerce. The presence in the statute of the words "whether carrier or shipper" has given rise to the contention that the prohibitions of the statute are directed only to carriers and shippers and their employees, acting within a well defined scope of agency. Although the Supreme Court has frequently declared that the purpose of the act is "to cut up by the roots every form of discrimination, favoritism, and inequality" (*United States v. Koenig Coal Co.*, 270 U. S. 512), it is contended that the court has not construed the statute as prohibiting or punishing persons or corporations other than carriers and shippers and authorized agents acting in their behalf.

A practice of considerable extent has developed whereby an independent corporation or person, who is neither a carrier nor a shipper, is interposed through whom the carrier reaches the favored shipper with so-called allowances and other things of value. The obvious purpose of the statute is thus easily defeated. If the words "whether carrier or shipper" were stricken from the act, it would leave its penal provision clearly applicable to every corporation and person whose transactions run counter to the provisions of the statute.

The last paragraph of section 1 provides that any person or corporation who accepts from the transporting carrier a rebate in respect to an interstate shipment shall forfeit to the United States a sum of money three times the amount of the rebate. The elimination of the words "from such common carrier" would permit the penalty to be inflicted upon the shipper, regardless of whether the rebate was given by the carrier or some independent corporation or person, so long as it is given as an offset against the transportation charges.

Interstate Commerce Act and Related Acts

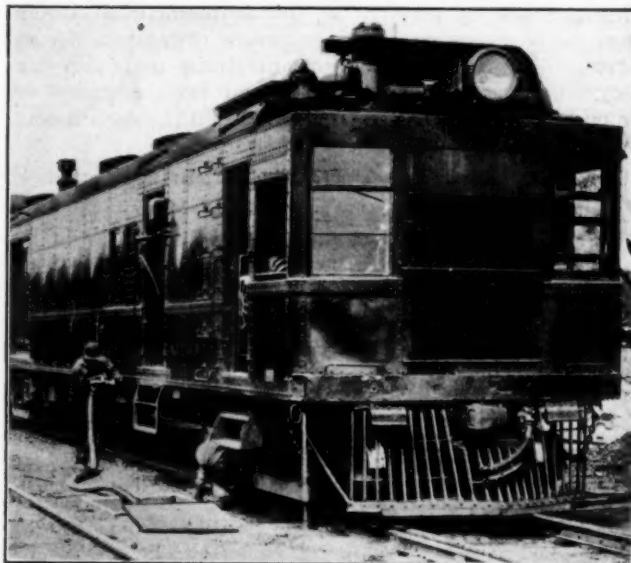
Sixteen prosecutions were instituted during the year, involving 149 counts, for violations of the interstate commerce act. These cases include charges of accepting and receiving concessions with respect to the transportation of property in interstate commerce; false billing; collecting greater compensation for shorter than for longer hauls of interstate traffic, etc. Twenty cases were concluded and fines aggregating approximately \$31,225 were imposed.

STRATHCONA MEMORIAL FELLOWSHIPS IN TRANSPORTATION, provided by the will of the late Lord Strathcona, of Canada, are open, at the Graduate School of Yale University, New Haven, Conn., each year to the number of five; and notice is given that applications will be received by the Dean of the school at any time before March 1. Application blanks may be obtained from the Dean. The fellowships are worth \$1,000 each. They are for college graduates, and are primarily for advanced work in reference to the construction, equipment and operation of railroads; but students can branch out into all features of transportation.

Rapid Fueling Facilities for Rail Motor Cars

THE S. F. Bowser & Co., Fort Wayne, Ind., has developed special motor-driven pumping and metering facilities for the rapid fueling of railway motor cars of either the gas or gas-electric type. With a 2-in. delivery hose this equipment will deliver 75 gal. of fuel per minute. An Xacto recording meter makes a continuous record of all fuel delivered.

In the layout illustrated, two discharge points are provided, one of which is shown. The discharge hose and nozzle is coiled when not in use and retained in a service box about 3 ft. deep wherein connection is made between



Fueling a Gas-electric Car with the Aid of Bowser High-speed Pumping Equipment

the discharge pipe from the pump house and the discharge hose used in filling the cars.

One man can operate the system by first pushing a button on the pump house and then going out into the yard to fuel the car. The push-button is connected with a regular controller which starts the 110-volt 2-hp. motor on the pump. A by-pass valve on the pump opens as soon as the pump starts and remains open as long as the discharge nozzle valve is closed. When the latter is opened, as when filling the fuel tank, the by-pass valve closes and uninterrupted delivery of fuel is effected until the operator closes the nozzle valve. The by-pass valve then opens again to relieve the pressure.

A storage tank of one carload capacity is buried underground near the pump house. Housed in the pump shed are proper filling accessories, together with a storage indicator to show the amount of fuel in the tank at all times, the motor-driven pump with attendant electrical apparatus, and the Xacto volumetric meter. This meter performs a dual function: first, it measures the total discharge up to 100,000 gal. and then repeats; second, it measures by means of a second dial, which can be set back to zero for each filling operation, total discharges up to 1,000 gal. In other words, before filling a rail motor car, the second or individual discharge meter is set back to zero. After filling the car this meter will then register the total number of gallons delivered to the car. Inasmuch as the setting back of the single delivery counter has no effect on the continuous counter,

the Xacto meter provides a simple means of keeping a record of fuel delivered to each car as well as of total fuel deliveries over a period.

Annual Report of the Board of Mediation

WASHINGTON, D. C.

THE Board of Mediation, appointed under the provisions of the railway labor act of 1926, has submitted to Congress its first annual report, for the fiscal year ended June 30, 1927.

During the year the board received 265 separate applications for its services in the adjustment of differences between carriers and employee organizations, involving 42 railroad labor organizations and 208 carriers. Of the 116 cases which had been adjusted by the end of the fiscal year 57 were settled through mediation and 32 were submitted to arbitration.

Extracts from the report, by Chairman Samuel E. Winslow, follow:

The present organization of the board, in addition to the five members and their secretaries, comprises the office of the secretary, the division of administration, and three technical divisions, an administrative and clerical staff of 27 employees, making a total force of 37.

It was found advisable, on account of the specialized character of agreements negotiated between carriers and their several classes of employees, to establish three technical divisions—one to deal with problems affecting the clerical, dispatching, supervisory, and station employees; one dealing with the problems affecting maintenance forces; and one covering train and engine service employees. The chiefs of these respective divisions have charge, under the secretary, of all inquiries relating to applications for the services of the board, act as mediators when so authorized, and as technical advisors to the board in their respective fields.

On account of the number of requests made upon the board for its services, it has been found necessary much of the time during the year to utilize the services of these technical division chiefs as mediators. In addition to the three mediators thus designated and the continuous services of board members in mediation one mediator has been appointed.

The individual cases presented varied widely in the number of carriers and employees involved and in the character of questions at issue. One case affecting a regional area involved 87 carriers and 60,000 employees; another case involved 48 carriers and 90,000 employees; in other cases only a single carrier and groups as small as 6 employees participated. Approximately 890 carriers and 2,000,000 employees are eligible for the services of our board under the act. A great majority of the problems presented involved considerations of wages and rules governing working conditions.

Of the 265 cases submitted to our board, 116 had been adjusted by the end of the fiscal year. Of these, 57 cases were settled through mediation, 32 cases were submitted to arbitration, 15 cases were withdrawn through mediation, 9 cases were withdrawn voluntarily, and in 3 cases applications appeared to our board as not subject to consideration in mediation proceedings. By the end of the year, 15 out of the 33 cases submitted to arbitration had been concluded by awards under the act, and since that time several arbitrations arranged during the fiscal year have been similarly concluded. (Details regarding settlements appear in tabular form hereafter.) At the end of the year 149 of the total of 265 cases received still remained unsettled. Of this number, 92 had been assigned for mediation and were being held in abeyance awaiting the arrangement of mediation conferences or the attention of mediators. The remaining 57 cases had been examined technically and the parties involved, notified of their receipt. They had not been accepted, however, for assignment or action in the field.

In addition to the foregoing major cases, during the year the board received applications for its services in the adjustment of 62 minor cases, for the most part grievance matters involving the interests of individual employees as affected by the application of rules or of discipline. Since, under the railway labor act, the adjustment of grievance matters through the

agency of our board is made dependent upon prior consideration by an appropriate adjustment board, and since such boards have not yet been generally organized, action upon applications for services in the adjustment of grievance matters has not been possible.

The railway labor act imposes a responsibility upon both carriers and employee groups to exert every reasonable effort to adjust directly and with all expedition differences arising out of wage contentions and the negotiation or application of rules governing working conditions. Our board is in possession of evidence that both carriers and employee organizations have made a bona fide effort during the year to dispose of differences through direct negotiations as contemplated under the railway labor act without resort to governmental assistance. Incomplete reports indicate that more than 400 individual differences between carriers and employee groups have been amicably adjusted through direct negotiations. Many of these settlements doubtless have been effected without external influences. Others have been effected as a result of adjustments previously and maybe elsewhere made in proceedings under the provisions of the railway labor act.

In the passage of the railway act Congress apparently accepted the joint conclusions of railroad managements and of railroad labor organizations in respect of the scope and method of legislation to provide governmental assistance in composing differences between carriers and their employees. Coercive and punitive provisions are absent in the railway labor act. The evident purpose was to safeguard the principle of voluntary action, with governmental participation principally confined to the extension of good offices in the solution of railroad labor problems. In thus dealing with legislation, in the practical effects of which there is such a great and vital public interest, Congress reposed an extraordinary responsibility in both railroad managements and employee organizations to discharge their obligations to each other and to the public in the utmost of good faith.

That the respective parties to the railway labor act have exercised a commendable diligence in solving many of their problems directly and without resort to governmental assistance is shown in the record of voluntary settlements referred to heretofore. Moreover, in so far as the experience of our board has thus far developed it, the attitude of both carriers and employee groups toward their obligations under the act has been encouraging.

In a field of industry in which technical involvements are numerous, in which the play of competitive economic interests is highly organized and in which centralized administrative control is not always possible, it is but natural that there should be some delay in arriving at conclusions involving the expenditure of large amounts of money without injustice to one or another of the elements involved. There has been during the year some resistance from a minority of carriers to the prompt submission of their problems to mediation and arbitration. In the opinion of our board this is due partially to deliberation on the part of carriers because of different interpretations of the provisions of the law. It is expected by our board, however, that this lack of promptitude in accepting the remedies provided in the railway labor act, will be minimized as experience is gained under the law.

While resort is had to arbitration Congress has provided for the appointment of an arbitration board of three and also made possible the appointment of a board of six if the parties in interest so stipulate. In cases submitted to arbitration each of the parties in interest shall appoint one or two arbitrators according to their determination to have a board made up of three or six members. The party arbitrators so appointed shall, if possible, appoint one or two neutral arbitrators according as the board is composed of three or six arbitrators.

In most instances arbitrators named by the parties in interest have failed to agree upon neutral arbitrators and in consequence, our board has found this duty of appointing arbitrators one of its most arduous and exacting tasks. Thus far, we have had the co-operation of distinguished and public-spirited citizens, whose services as neutral arbitrators have accomplished much toward not only complying with the stipulations of impartiality provided by law, but in maintaining high standards of economic deliberation in the consideration of questions at issue.

The creation of adjustment boards to dispose of grievance matters, as contemplated in the act, has been retarded during the year largely by reason of the complexity of the problem.

Our board believes that the railway labor act is sound in purpose and principle. However, it should be emphasized that the absence of coercive provisions places a definite responsibility upon both carriers and employee organizations to deal with and, if possible, settle their own problems in the interests of each other and of the public.

An Improved Track Mower

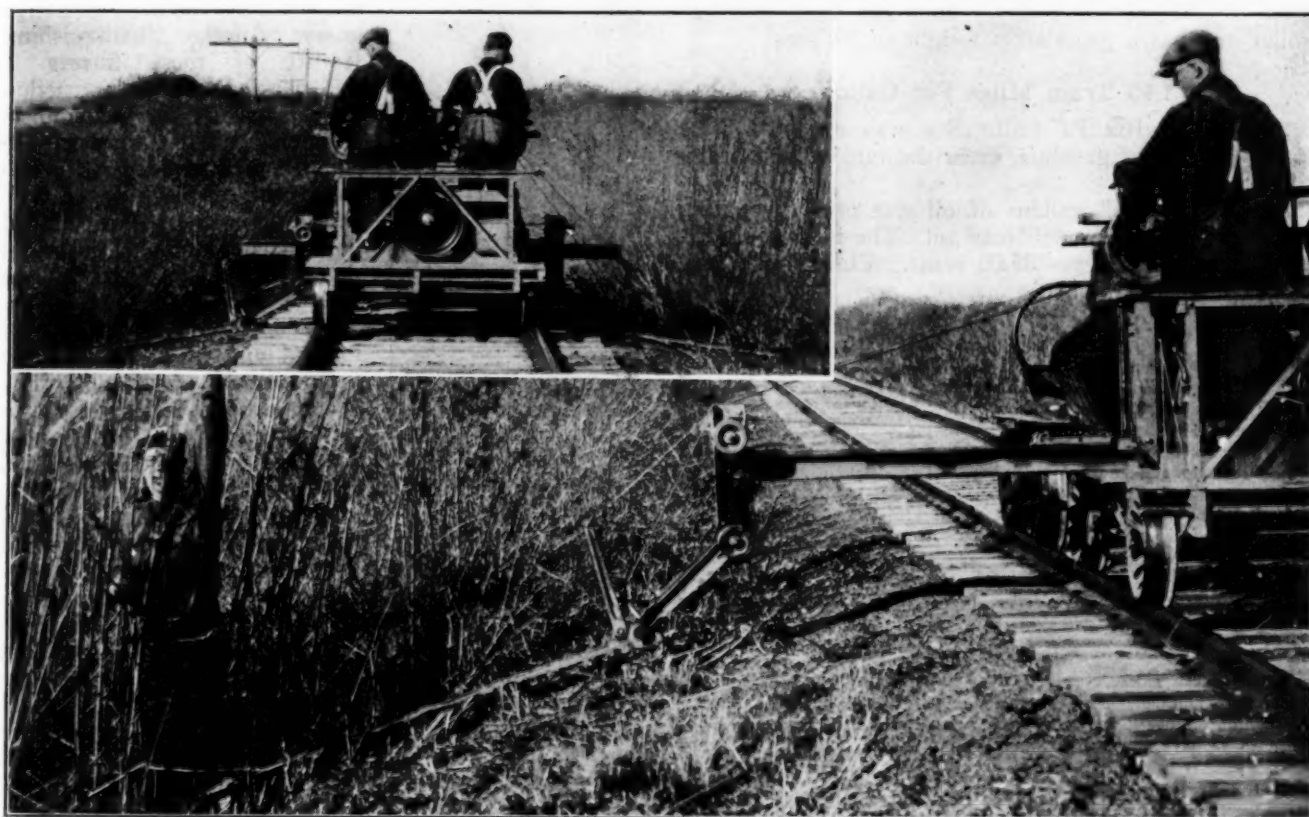
A DEFINITE advance in track mower design is seen in a new machine recently placed on the market by Fairmont Railway Motors, Inc., Fairmont, Minn. The outstanding features of this new mower, which is designated as Fairmont M24, are a wide reach of the cutter bars (to a distance of 13 ft. from the rail), rapid and easy adjustment of the cutting bars to the contour of the ground, automatic stopping of the knives when they are raised and a device for stopping the mower in case the cutter bars strike an obstruction.

The machine consists of a four-wheel track car on which are mounted a five-horsepower Fairmont gasoline engine, together with the cutter-bars and the operating mechanism and controls. The mower can be hauled by any track motor car with a six-horsepower engine and

while it continues on the other. Cutting begins automatically when the cutter-bars are lowered into the cutting position while the engine is running. The engine on the mower is equipped with a governor to maintain a constant speed of the cutter blades, regardless of the density of the vegetation or whether or not cutting is in progress.

The cutter-bars can be raised or lowered by the operators to follow the contour of the ground closely. While cutting the outer swaths the power heads are extended out to the shoulder of the embankments and the cutter-bars may be dropped downward from this point to an angle of 55 deg. from the horizontal, permitting the cutting of weeds on the slope of the embankment.

Provisions have been made for protecting the mower from injury in case hidden obstructions are encountered. The mower is attached to the motor car by an automatic spring coupler and if the cutter-bars strike an obstruc-



The Machine Is Equally Effective in Cutting Close to or at a Distance From the Rail

requires a crew of three men, one to drive the towing car and two to operate the mower, one operator controlling a cutter-bar on each side. The mower will cut from within two feet of each rail to an extreme distance of 13 ft. from the rail, cutting swaths 5½ ft. wide on each side of the track at one operation. It is said to operate in heavy weeds at the rate of four miles an hour for the inner swaths and three miles an hour for the outer swaths, or an average of 1¾ miles for the entire work.

The cutter-bars are attached to the ends of extension beams which are drawn in or out to the desired position by rack and pinion gears actuated by the operators. They are driven by a belt from the engine through power heads at the ends of the extension beams, so arranged with idler pulleys that the cutter-bars cease their movement when raised from the cutting position, thus permitting the mowing to be stopped on either side

tion the mower will uncouple from the towing car. Each operator is provided with a pedal brake by which he can stop the mower in the event he sees an obstruction which the driver has not observed. Power lifts, also provided with pedal controls, raise the cutter-bars to a vertical position and also draw in the power heads if it is necessary to pass whistle posts or other signs or objects without stopping the motor car. The power lift is also used for folding back the cutter-bars to a vertical position when mowing is discontinued, a safety chain being hooked around each cutter to hold it in place securely. The belt drive to the power head also serves to prevent injury since in case an obstruction is met which cannot be cut the belt will slip, thus stopping the operation of the cutter-bar.

The mower is provided with a turntable of the screw jack type operated by a hand wheel to permit its ready removal from the track at road crossings or set offs,

or to turn the unit for the purpose of cutting the second swaths by running back over the section of track on which the first swaths have been cut.

Gas-Electric Car Operation on the M. & O.

AN evidence of the economy of operation of gas-electric motor cars is found in a recent compilation of data covering the 12 months of service from August 8, 1926, to August 1, 1927, by the Mobile & Ohio.

This road operates two 70-ft. gas-electric cars, equipped with Electro-Motive Company power plants, including General Electric generators and motors, a distance of 251 miles per day. Each car hauls a 35-ton trailer and has a gross train weight of 83 tons.

1.96 Train Miles Per Gallon

A total of 169,174 train-miles was covered, using 86,339 gallons of gasoline, or at the rate of 1.96 train-miles per gallon.

A total of 2,417 gallons of oil was used, averaging 69.99 train-miles per gallon of oil. The total operating cost per train-mile was 35.08 cents. The detailed cost data is as follows:

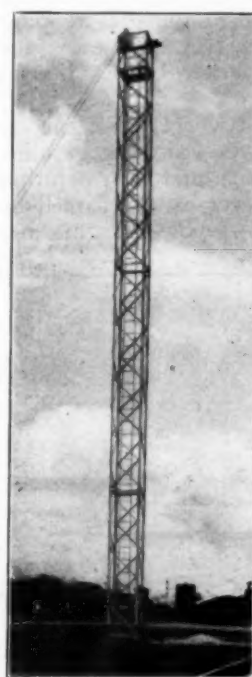
	Cents per train-mile
Repairs (labor and material).....	2.12
Fuel (gasoline).....	6.38
Cost of lubricants.....	0.67
Enginehouse expense (inspection).....	1.26
Other supplies and expense.....	1.22
Wages of train and engine crews.....	15.22
Sub-total.....	26.87
Substitute train service.....	2.82
Interest and depreciation.....	5.39
Total.....	35.08

GENERAL DATA

Total motor car miles.....	169,174
Steam train mileage due to heavy traffic.....	8,032
Steam train mileage due to motor cars out for repairs (equivalent to 10 days operation in 12 months).....	2,510
Total steam train miles.....	10,542
Total train miles scheduled.....	179,716
Percentage of scheduled mileage covered.....	98.6
Gals. of gasoline.....	86,339
Cost of gasoline per gal.....	12.49
Train-miles per gal. of gasoline.....	1.96
Car-miles per gal.....	3.86
Gals. of oil.....	2,417
Cost of oil per gal.....	50.11
Train-miles per gal. of oil.....	69.99

Truscon Develops Structural Steel Floodlight Tower

SEVERAL new features are incorporated in the structural-steel floodlight towers which the Truscon Steel Company, Youngstown, Ohio, has placed on the market recently.

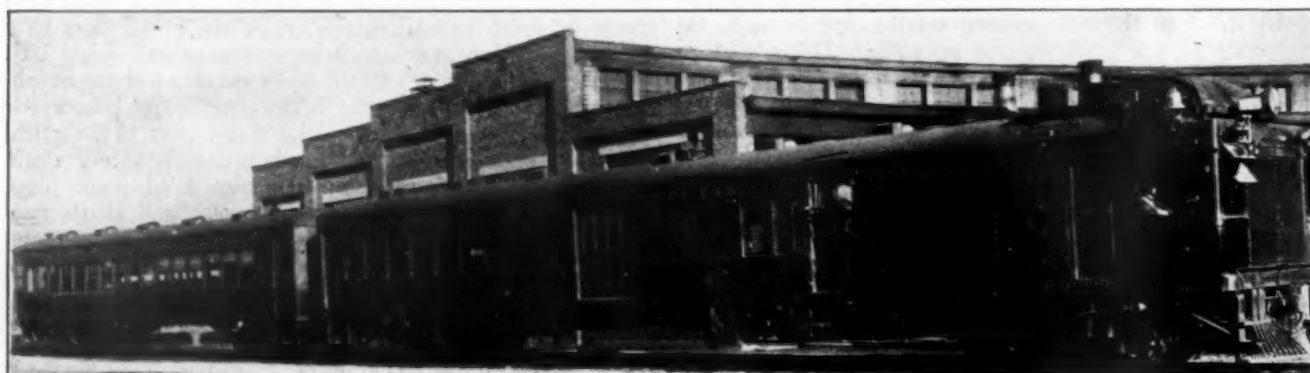


Tower for Mounting Two Projectors

Copper bearing steel is employed for the structural angle-iron sections of these towers in order to reduce corrosion to a minimum. This is believed to be particularly desirable in view of the fact that most floodlight towers are located in the vicinity of railroad yards or roundhouses where the air is charged with locomotive gases. Another distinguishing feature of these towers is the parallel-sided construction which makes for economical erection. The towers are shipped disassembled, with one shop coat of black "Bar Ox" paint or with a hot dipped galvanized finish. It is stated that towers from 66 ft. to 125 ft. in length may be assembled complete on the ground and lifted in place by means of a jib crane. The tower proper is, in effect, a self-sustaining fabricated pole of three-foot square section and requires no guy wires, owing to the depth and volume of the concrete foundation

in which the angle-iron base of the tower is embedded. Truscon steel floodlight towers can be furnished in standard sizes to mount either 2, 6, 12 or 20 floodlight projectors. It is recommended that the tower height be 110 to 125 ft. in order that the projectors may be above the smoke zone. The top of the tower is designed to provide for a wood platform with an entrance hatchway in the center. A four-foot railing surrounds this wooden platform and the floodlight projectors are mounted on the railing.

For safety reasons the ladder has been placed inside the tower and an additional factor of safety can be secured by locating a weatherproof switch at the base of the tower so that the maintainer may turn off the current before climbing.



Gas-Electric Train at the M. & O. Shops, Jackson, Tenn.

Coupler Centering Device

THE illustration shows a new coupler centering device recently brought out by Hotchkiss, Blue & Co., Ltd., 249 Railway Exchange Building, Chicago, Ill., for use on passenger car equipment. The principal feature of the design is provision for an unusual amount of lateral motion (six inches) each way from the center. In addition, arrangements are made for the steam, brake and signal pipes to be carried with the coupler when the car rounds curves, and thus the stretching of hose or pulling apart of hose couplings is prevented.

The device consists of a main coupler carrier, a saddle casting mounted thereon and movable in either direction by the lateral action of the coupler, and a separate carrier for the steam and air pipes, also movable in either direction by the lateral action of the coupler. This latter carrier is housed in the saddle casting and in addition to maintaining the pipes in proper relation with the coupler and with each other, it acts as a bearing plate for the coupler shank.

When rounding curves, the coupler moves the pipe carrier slightly in advance of the movement of the saddle casting, after which both the carrier and the saddle move together. This action takes place in either directions depending on the direction of the curve and a lateral movement of six in. on each side of the central position is obtained.

As will be seen, the main coupler carrier is a 5-in. H-beam supported by brackets at each end in proper relation to the buffer sill of the car and with a guide rod extending lengthwise at the rear of the carrier for supporting the follower sleeves and compression spring.

The saddle casting is arranged to have inter-engaging and sliding relation with the carrier and is provided with depending arms at the rear for engaging the follower sleeves and spring so that when two adjacent cars in a train have rounded a curve and are again alined on straight track, the spring will force the saddle casting

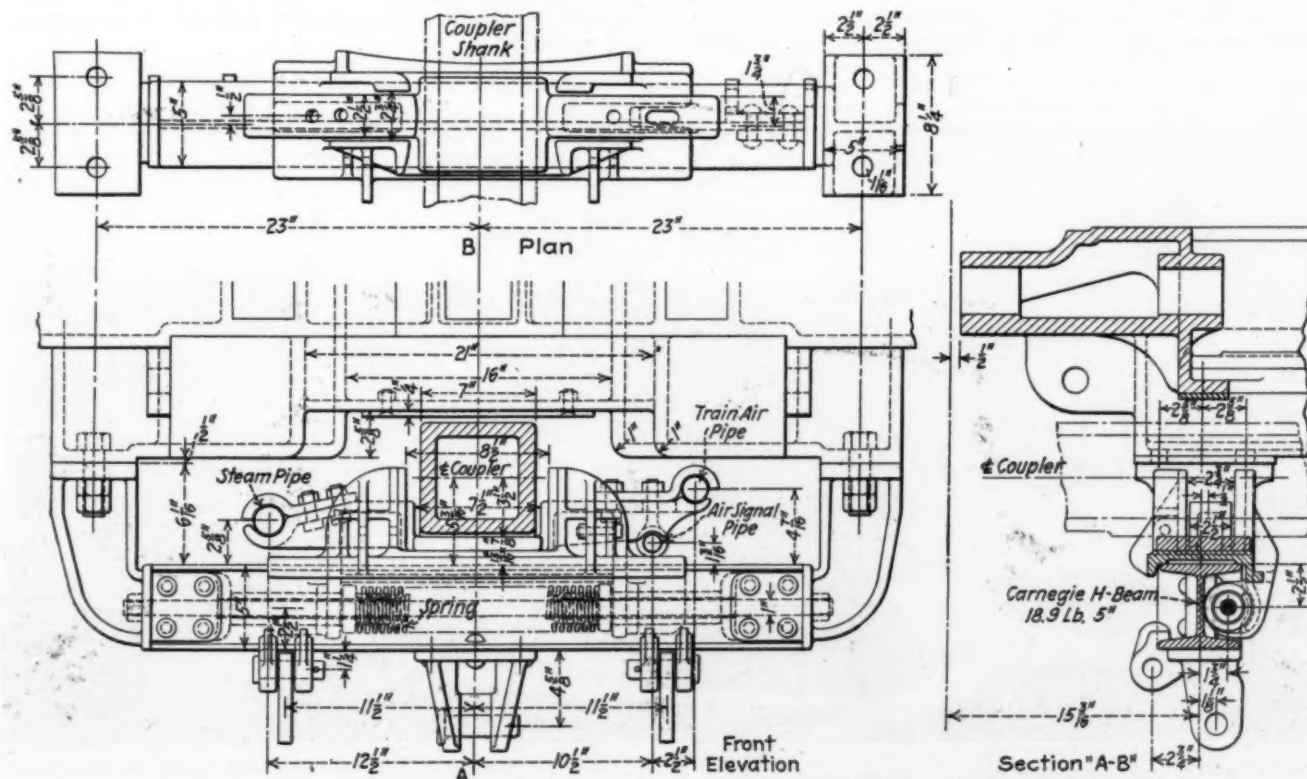
and its superposed coupler and pipe carrier to their normal, or central positions.

The first application of centering devices of this type was to a baggage car on the Tennessee Central. They are being applied at the present time to a new all steel demonstration car being constructed by Hotchkiss, Blue & Co., Ltd., for the Department of Commerce, Bureau of Mines.

Development Association Semi-Annual Meeting

THE traffic of a railroad can be increased through the furnishing of correct data to industries that may locate on a railroad, by supplying farmers with information that will enable them to increase their production and through publicity that will have service and news value as its keynote rather than propaganda, according to addresses made at the 19th semi-annual meeting of the American Railway Development Association at Chicago on December 1 and 2.

Addresses were made by O. K. Quivey, general agricultural agent of the Baltimore & Ohio on The Fair of the Iron Horse; Samuel O. Duran, editor of the *Railway Age*, on Public Relations Work; E. L. Taylor, assistant to the vice president of the New York, New Haven & Hartford on Community Development and Our Part In It; John W. Haw, director of the department of agricultural development of the Northern Pacific, on The Changing Agriculture of the Northwest; H. J. Schweitert, general development agent of the Illinois Central on The Effect of the Flood on the Agricultural and Industrial Development of the Mississippi Valley; R. C. Ashby, a professor of the University of Illinois, on Live-stock Terminal Markets versus Direct Selling; G. A. Cardwell, agricultural and industrial agent of the Atlantic Coast Line on Suggestions from



General Arrangement of the Coupler Centering Device

Europe; O. B. Price, agricultural agent of the Michigan Central on Promoting the Use of Agricultural Limestone; H. R. O'Brien, of Ohio State University on Publicity and Public Relations in Development Work; Robert S. Henry, director of public relations of the Nashville, Chattanooga & St. Louis on Successful Publicity Methods; W. F. Priebe, president of the Priebe Poultry Commission Company on The Future of the Poultry Industry; E. G. Lantz, representative of the Portland Cement Association on A Program for Farm Building Improvement; C. C. Palmer, president of the Noble County Farm Bureau on How the Farmer Meets the New Competition; W. H. McKee, livestock commissioner of the Chicago Union Stockyards on The Effect of Diseases upon the Livestock Industry; W. H. Hill, assistant manager of the Buffalo Stockyards of the New York Central on The Master Farmer Movement; George S. Oettle of the Union of South Africa on Rural Development Work by South African Railroads; Val Kuska, colonization agent of the Chicago, Burlington & Quincy on Colonization Methods that are Bringing Results; George F. Bates, assistant to the vice president of the Delaware & Hudson on The Freight Shippers' Guide; W. G. Hunton, industrial agent of the Maine Central on the New England Council Plan; J. F. Muller, industrial agent of the Delaware, Lackawanna & Western, on The Reforestation of Idle Lands; T. L. Peeler, industrial commissioner of the Missouri-Kansas-Texas on How We Can Co-operate with Power Companies and Other Public Utilities; and A. Leckie, industrial agent of the Kansas City Southern on Keeping Track of the Industries on Our Lines.

Mr. Dunn, in discussing public relations work, said that the two offices on the railroad that can do the most to promote a kindly feeling among the public are those of the dining car superintendent and the ticket agent as both come in closer contact with the public than any other department of the railroad. He recommended that these men be properly trained in courtesy and salesmanship so as to render a service that will please rather than offend. Mr. Dunn also spoke on appointments to the Interstate Commerce Commission, describing the qualifications that should be possessed by the members

of the Commission, in contrast to those which present and past members possessed when appointed.

Mr. Schweitert said that although the Mississippi flood had reduced agriculture to a low level, livestock and industrial development had progressed with unusual rapidity. Following the destruction of fertile valley lands and the impairing of finances the farmers migrated to the hills and engaged in livestock raising and dairying, which give a more immediate return on the investment. The success of the latter enterprises has resulted in the establishing of several new industries along the lines of the Illinois Central, among which are six cheese factories. The eagerness of the people in this territory, he said, was indicated in the attendance at a dairy show held at Memphis, Tenn., under the direction of the National Dairy Association and the Illinois Central, when 110,000 people visited the show in one day.

Mr. Ashby gave some interesting facts regarding livestock terminal markets and direct selling but did not offer any argument in favor of either. W. H. Hill, in the discussion which followed, opposed livestock terminal markets over which certain large industries exercise control, saying that the latter, under such conditions, are able to control the market to the disadvantage of the farmer. Mr. Price told of the increased production from land that had been treated with limestone. In one demonstration which he cited, the farmer who was setting the example for his territory was unable to lime more than two acres at the entrance to his field before seeding time, and when the crop materialized the two acres bore a prize growth while the remainder of the field looked as if it had not been planted. Mr. Price also spoke of the limestone bins which the New York Central is assisting the farmers to establish for community use with little expense. These are built at a low cost by the farmers on railroad property and usually are roofless.

Mr. O'Brien emphasized service as a keynote to successful publicity and urged railroad public relations men to assist publications by furnishing information after an event takes place as well as in advance. He cited numerous cases of publicity work done by industries and suggested that the railroads also popularize their work and products.



Ewing Galloway

P. R. R. (Left) and D. T. & I. Stations at Springfield, O.

Looking Backward

Fifty Years Ago

Dining cars have been put on all regular trains on the International & Great Northern operating between Willis, Tex., and Houston. A meal is furnished for 50 cents.—*Chicago Railway Review*, December 8, 1877.

The Cairo & St. Louis [now a part of the Mobile & Ohio], a 3-ft. gage railroad, has for the third time begun condemnation proceedings in the United States court in order to obtain a right of way into Cairo, Ill. The original line by which the company entered the city was washed away by floods and a second line was destroyed in a like manner.—*Railroad Gazette*, December 7, 1877.

A New York inventor is fitting up a locomotive at Whitesboro, N. Y., to test an improvement which is expected to effect a large saving in fuel. The smoke bonnet has been lengthened sufficiently to permit the introduction of a large coil of pipe and the feed-water exposed to the hot products of combustion as they come through the boiler tubes is to be heated nearly to the boiling point.—*Railroad Gazette*, December 7, 1877.

Twenty-Five Years Ago

The Interstate Commerce Commission, in denying a request of the Business Men's League of St. Louis for a rate reduction, finds that water competition on the Pacific Coast compels the establishment of a basis of freight rates from New York, which is practically the same as that in effect from the middle west.—*Railway Age*, December 12, 1902.

The New York Central & Hudson River has prepared a plan for the improvement of the terminal facilities at the Grand Central station in the Park avenue district in New York, which involves the depression of its tracks and construction of a yard beneath the proposed level of streets which are now closed.—*Railway and Engineering Review*, December 13, 1902.

The Pennsylvania has made an arrangement with the United States Steel Corporation whereby practically the entire motive power equipment of the Duluth & Iron Range is to be turned over to the former road for operation during the coming winter in an effort to allay some of the congestion at terminal points.—*Railway and Engineering Review*, December 13, 1902.

Ten Years Ago

The French government, in a cable to Washington, has paid high tribute to the "conduct of certain American soliders, pioneers and workmen on the military railroad in the sector of the German attack west of Cambrai on November 30. They exchanged their picks and shovels for rifles. Many died. . . . All helped to repulse the enemy."—*Railway Age Gazette*, December 7, 1917.

The general operating committee for the eastern railroads, appointed to arrange for the pooling of facilities, on November 28 ordered that lines reaching the Atlantic seaboard issue an embargo on export steel products except for the government and directed the discontinuance of the Broadway Limited, 20-hour train of the Pennsylvania.—*Railway Age Gazette*, December 7, 1917.

Declaring that unification in the operation of the railroads is indispensable for the national defense and welfare, the Interstate Commerce Commission on December 5 recommended to Congress that unification of the railways be effected, either by the carriers themselves or by their operation by the President, with a guarantee of an adequate annual return. The commission regards the rate increase proposal as an impracticable solution of the difficulty.—*Railway Age Gazette*, December 7, 1917.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The American Songbag, by Carl Sandburg. Enough railroad songs are included in this collection of 280 to form one section, while exploration of the other sections brings out favorites from other fields of American enterprise that have hitherto been as inaccessible. Words and music both are given. Pub. by Harcourt, Brace & Co., New York. \$7.50.

Iowa and the Illinois Central. Concentrated railroad and state history, illustrated with reproductions of old photographs and cuts. 15 p. Pub. by Illinois Central System, Chicago, Ill. Apply.

State Regulation of Public Utilities in Illinois, by Charles Mayard Kneier. University of Illinois studies in social science, v. 14, no. 1. 226 p. Pub. by the University, Urbana, Ill. \$1.50.

Periodical Articles

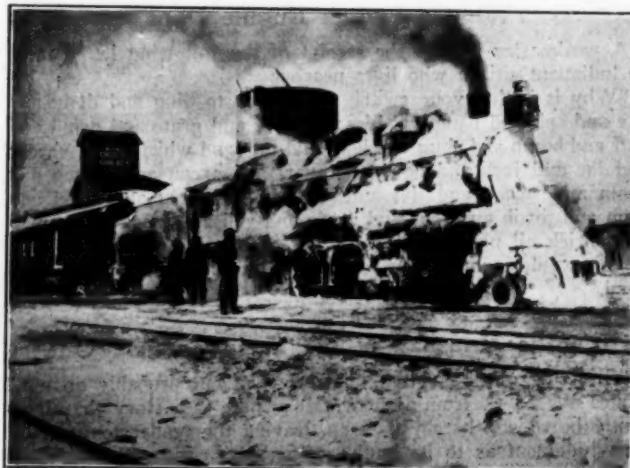
Authorized by Timetable, by A. W. Somerville. From any point of view a mighty fine story. *Saturday Evening Post*, November 26, 1927, p. 16-17, 101, 103.

Cincinnati's Successful Railroad Venture, by Charles W. Foss. Recent history of the Cincinnati Southern. With map. *Annalist*, November 25, 1927, p. 823.

Let's Talk Low Freight Rates, by Robert S. Henry. What has actually happened to freight rates—reductions—and what seems to be in prospect for the railroads. *Nation's Business*, December, 1927, p. 34.

A Railroad Statesman, by Richard Hathaway Edmonds. A tribute to S. Davies Warfield. *American Review of Reviews*, December, 1927, p. 606-607.

STOP, LOOK AND LISTEN! This familiar injunction, at the head of a card which is being distributed to motorists by the Lehigh & New England, is used as an introduction to a message, printed in large letters, giving the essential clauses of the recent decision of the Supreme Court of the United States, wherein everybody is warned that, when approaching a railroad crossing, it is a duty if trains cannot be seen without getting out of the automobile, to stop and get out.



Winter at Attica, Kans., on the Santa Fe

Odds and Ends of Railroading

Other railway families may possibly have greater service age, but the Pennsylvania, in the LaBar brothers, claims the railway family weight record. Their measurements are as follows:

Moses D. LaBar, age 76, service 41 years, weight 220 lbs.

J. F. LaBar, age 72, service 43 years, weight 230 lbs.

Samuel LaBar, age 70, service 51 years, weight 200 lbs.

George S. LaBar, age 66, service 45 years, weight 210 lbs.

All of the brothers are now on the Pennsylvania pension list.

While on a hunting trip near Tulare, S. D., in October a poorly aimed shot from the weapon of a farm lad knocked a pipe from the mouth of R. W. Anderson, superintendent of motive power of the Chicago, Milwaukee & St. Paul, according to the Milwaukee Magazine. An inconvenient but not fatal accident, which the correspondent of the Iowa and Dakota division ventures, gave Mr. Anderson "the surprise of his life."

One of the outstanding graduates of the railway field now making music a profession is James Hagney, operatic tenor. Mr. Hagney was employed in the office of the vice-president and general auditor of the St. Louis-San Francisco for 12 years prior to enlisting in the Army during the World War. He remained in France after the war to continue his musical studies and has since scored successes in the leading roles of numerous operas here and abroad.

Energetic thieves, evidently with a working knowledge of freight car construction, committed an unusual robbery in Indiana recently when 30 brass bearings were removed from the journals of freight cars of a Baltimore & Ohio train standing on an East Chicago siding awaiting movement orders. It was necessary to jack up each freight car before the journal bearings could be removed. The thieves escaped with their haul. Railroad detectives discovered the robbery before the train pulled out and there was a delay until new bearings could be applied.

"Which is why I remark,
And my language is plain,
That for ways that are dark,
And for tricks that are vain,
The heathen Chinese is peculiar."

Nearly every one knows at least the last three lines of Bret Harte's famous poem, but not every one knows that one of its first recorded publications was in an advertising pamphlet produced by the Rock Island Lines in the last century. This pamphlet contained one verse of the poem on each of its 10 pages, with an appropriate wood-cut illustration and the admonition to "take the Rock Island to Peoria, La Salle, Muscatine" and a number of other points.

What a Switch Engine Does

A yardmaster reports the receipt of the following letter from an indignant citizen who lives nearby:

"Why is it that your switch engine has to ding and dong and fizz and spit and bang and hiss and pant and grate and grind and puff and bump and chug and hoot and toot and whistle and wheeze and jar and jerk and howl and snarl and groan and thump and boom and smash and jolt and screech and snort and snarl and slam and throb and roar and rattle and yell and smoke and smell and shriek all night long?"

This would seem to be a rather difficult question to answer off-hand.

It's the Unusual Which Knocks Them Out

"Speaking of things that might happen but probably do not," writes W. A. R. from Bangor, Me., "here is a story that I recently heard and hereby pass on, leaving the reader to form his own judgment as to its truth:

"A long passenger train was seen standing at a busy highway crossing, where a considerable crowd of people had gathered.

The engineer lay white and still upon the grass, apparently in a very serious condition. A gentleman who chanced upon the scene inquired solicitously as to how the engineman had been injured. 'Oh,' was the reply, 'he isn't hurt. A motorist approaching this crossing stopped at a safe distance back, and the engineer fainted.'"

Kind Words from Cincinnati

"Times and conditions change," says the Cincinnati Enquirer, "mortals come and go, but certain things remain. The railroad will remain. The airplane and the automobile will never replace it for long hauls or heavy loads, nor will they ever be preferred by the mass of men as the means for long-distance travel. The commuter of the future will cling to the railroads as he does today. The reason should be obvious. The railroad is the heart-nerve of civilization—the world's greatest and best civilization. It moves the food of the nations, the armies, the coal that drives the wheels of industry, the news and literature which feed the intellects of men, the mail, without which we could no longer do business or enjoy life in its more important aspects and relations. The railroad gives service, and service is the only open road to mortal happiness."

A C. & O. Family With Long Service

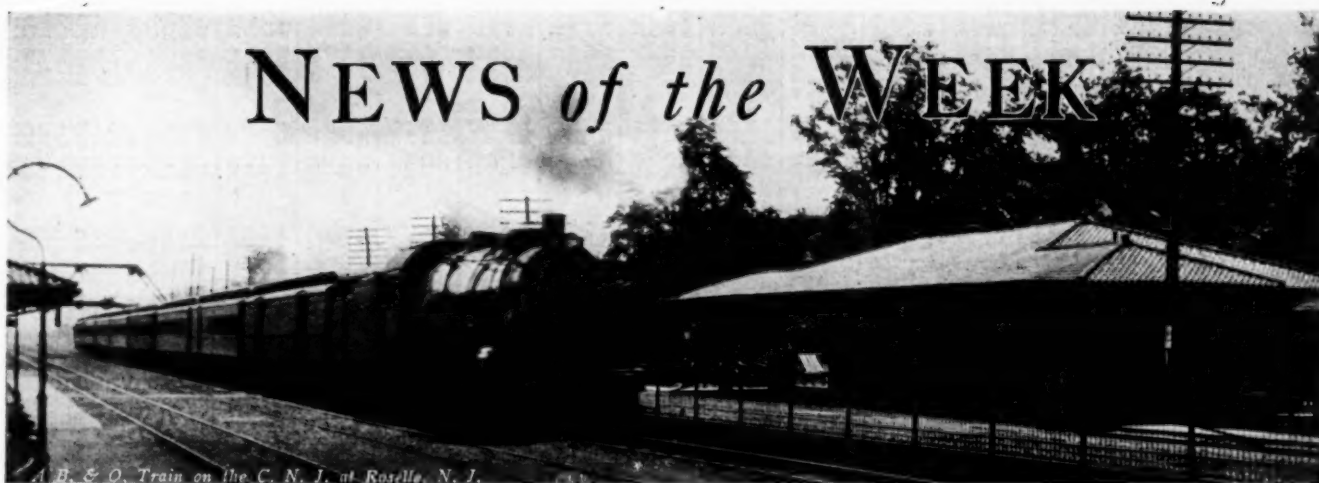
The Perkins brothers, of the Chesapeake & Ohio, submit their claim as a railway family of long service, based on 135 years to the credit of the four of them. The brothers are sons of Robert Perkins, who worked for the C. & O. for several years prior to his death. E. W. Perkins, night roundhouse foreman at Handley, W. Va., has 38 years' service; R. G. Perkins is machine foreman at Huntington, W. Va., and has been in the service 36 years; Hardy Perkins, chief clerk to the general storekeeper at Richmond, Va., 35 years, and R. A. Perkins, lead man in the air gang at Huntington, 26 years.

Another unusual relationship on the C. & O. is found in the Wilkersons, father and son, who work in the same office. A. H. Wilkerson, the father, is chief clerk of the freight tariff bureau at Richmond, while A. R. Wilkerson, the son, is chief tariff compiler in the same bureau.

Now You Tell One

Dogs have been known to adopt rabbits and even chickens, but until Bruno came out of the Montana mountains and sheep-grazing areas three years ago, none had ever adopted a railroad locomotive. Switch engine No. 911, which operates in the yards of Bozeman, Mont., and Bruno have been inseparable for three years. Where No. 911 goes, Bruno, who has been given the sobriquet of "Northern Pacific switchman," goes also. Bruno never rides. A yellow stag hound, he runs beside the engine always, averaging 60 miles a day. When the switch engine crew works overtime, Bruno works overtime. Nights and Sundays he sleeps in the enginehouse, guardian over the engine. When Bruno turned up three years ago, he was a puppy. Enginemen endeavored to chase him away, but he adopted the locomotive and has not missed a day's duty since. He times his meals with the switch crew. Whenever the locomotive stops, he lies on the ground near the cab. The release of the locomotive air is his cue. He knows that the engine is about to move. All he needs is to watch the switchman and he interprets the signal, darting ahead or to the rear, depending upon that signal, even before the locomotive moves. Always Bruno follows the same course. His path is beaten in the cinders. Sometimes that path is just outside the ties; again it leads over the hills, depending upon the hazard. When the locomotive is about to cross the bridge, Bruno, although he might be several rods ahead, steps aside, lets the locomotive pass, and then darts ahead. When the switchmen carry a switch club, Bruno carries a stick in his mouth.

NEWS of the WEEK



THE CHESAPEAKE & OHIO has applied to the Interstate Commerce Commission for authority to abandon its steam ferry across the Ohio river from South Portsmouth, Ky., to Portsmouth, Ohio, because a new steel highway bridge has been constructed at that point.

HEADQUARTERS OF THE PORTLAND DIVISION of the Boston & Maine, will be removed to Dover, N. H., about January 1. Besides the offices to be moved from Boston, the staff of the division engineer, now at Salem, Mass., and that of the master mechanic, now at East Somerville, Mass., will also be moved.

RAILROADS IN WESTERN TERRITORY have replied to the latest request of the Brotherhood of Railroad Trainmen and the Order of Railway Conductors by denying passenger and freight trainmen an increase in wages of \$1 per day. The present wage contract does not terminate until March 1, 1928, and the demand of the trainmen, which was filed with the railroads on November 1, was designed to cover the period from March 1, 1928, to March 1, 1929.

THE ILLINOIS COMMERCE COMMISSION on November 23 gave permission to the Chicago & North Western and the Chicago Union Station Company to sell the air rights over portions of their tracks along the Chicago river in Chicago. The North Western asked approval of its sale of air rights to Marshall Field & Co. for the construction of a warehouse, while the Union Station Company asked to be allowed to sell air rights to the Chicago Daily News for the construction of an office building.

Boston Technical Societies to Hold Welding Meeting

The Affiliated Technical Societies of Boston will hold, on December 14, a meeting devoted to structural, pipe and industrial welding. The morning session will be held at Chipman Hall, Tremont Temple, and the afternoon and evening sessions at the Boston City Club. The program includes 12 papers, which will be read by representative men of the welding industry and discussing the three welding processes now commonly used. The annual engi-

neers' dinner of Boston will be held in the auditorium of the Boston City Club, starting at 6:30 p. m.

Mo. P. and I. C. Urge Federal Flood Action

C. H. Markham, chairman of the Illinois Central, and L. W. Baldwin, president of the Missouri Pacific, testified at the hearing before the House committee on Flood control on November 30 regarding conditions resulting from the floods in the Mississippi valley, urging the importance of prompt action on the part of the federal government dealing with flood control as a national problem.

Tractors and Trailers or Chassis and Containers?

A special committee of the Society of Terminal Engineers will report to the society at a meeting to be held at the Engineering Societies' Building, New York, on December 13, on the question, "Are tractors and trailers or chassis and containers the more economical type of equipment?" F. J. Scarr, of the Scarr Transportation Service, New York, is chairman of the special committee.

Dinner to Prize Winners

Nine railroads acted as hosts to boys and girls who attended the Sixth National Boys and Girls Club Congress at Chicago, at a dinner on December 1. Winners of the contest on the subjects of field crops, livestock, gardening and domestic work, conducted by the railways during the year, were awarded free transportation to the International Livestock Exposition and the Congress held during the week of November 26 to December 3. Samuel O. Dunn, editor of the *Railway Age*, was the principal speaker at the banquet, which is the fourth given by the railroads. The railroads which participated this year are the Baltimore & Ohio, the Chicago, Burlington & Quincy, the Chicago River & Indiana, the Chicago Great Western, the Illinois Central, the Pennsylvania, the Chicago & North Western, the Chicago, Rock Island & Pacific, the Atchison, Topeka and Santa Fe, and the Wabash.

Progress in New England Flood Rehabilitation

The Rutland announces that through trains between Boston and Montreal, via Keene, Bellows and Falls and Rutland, are now running; and the through freight trains are making schedule time. Day passenger trains are delayed somewhat because of the numerous work trains occupying the track.

On the Central Vermont (see map, *Railway Age*, November 26, page 1051) filling and ballasting has proceeded as far south as Bolton (4 miles beyond the furthest point of progress noted in last week's *Railway Age*, page 1132). Northward the line has been opened between White River Junction and Bethel (5 miles restored since last week). In the intervening 54 miles between Bethel and Bolton the work of restoration of track and bridges to permit the passage of ballast trains is being rapidly carried forward at a number of points.

P. R. R. Anniversary

The Pennsylvania Railroad began running trains through from Philadelphia to Pittsburgh on December 10, 1852, and the seventy-fifth anniversary of this date is being celebrated by a radio program, sent out from KDKA, Pittsburgh. The "Public Works" of the state of Pennsylvania, which originally constituted the main line of traffic between Philadelphia and Pittsburgh, consisted of a railroad from Philadelphia to Columbia, a canal from Columbia to Hollidaysburg, a portage railroad of ten inclined planes and ten levels over the mountains to Johnstown, and a canal from Johnstown to Pittsburgh. The canal boats were built in sections, to facilitate their transfer to railroad trucks on which they were hauled up the inclined planes. This line of communication was opened in March, 1834. The boats were hauled up the inclined planes by horsepower and later by stationary engines winding up a rope.

The Pennsylvania Railroad received its charter in 1846 and immediately began building the railroad from Harrisburg to Pittsburgh. The difficulties encountered in the Allegheny mountains delayed the opening of the line over the summit until Feb-

(Continued on page 1190)

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1927

Name of road	Average mileage operated during period	Operating revenues					Operating expenses					Operating ratio	Net from railway operation	Operating income (or loss)	Net operating income, 1926
		Freight	Passenger	Total	Way and structures	Maintenance of equipment	Traffic	Transportation	General	Total					
Akron, Canton & Youngstown.....	Oct. 171	\$259,747	\$269	\$272,888	\$34,930	\$29,813	\$12,935	\$78,447	\$13,696	\$168,742	61.9	\$103,946	\$97,059	\$68,073	\$42,383
Albany, Troy & Saratoga.....	Oct. 171	2,593,254	2,711,520	5,304,774	371,527	314,527	115,598	371,527	144,550	1,724,430	64.3	969,490	823,342	505,540	361,959
Atchison, Topeka & Santa Fe.....	Oct. 9,449	17,026,274	2,754,866	20,781,140	2,865,925	3,937,486	3,976,236	5,314,656	4,452,330	12,839,003	60.1	8,535,752	6,503,838	6,633,508	7,229,121
Atchison, Topeka & Santa Fe.....	10 mos. 9,423	125,544,911	32,668,955	171,949,751	29,066,705	34,009,601	3,976,236	49,830,153	4,033,885	120,173,723	69.9	51,776,028	37,232,863	37,277,774	44,368,186
Gulf, Colorado & Santa Fe.....	Oct. 1,944	2,641,809	243,130	3,041,980	400,587	413,684	54,345	887,774	72,878	1,796,500	59.1	1,245,480	1,031,614	975,164	819,592
Gulf, Colorado & Santa Fe.....	10 mos. 1,944	24,853,787	2,357,530	28,562,386	5,685,479	5,685,479	10,237	10,237	714,288	21,204,604	74.2	7,357,982	6,252,554	4,655,755	4,655,755
Panhandle & Santa Fe.....	Oct. 964	1,143,712	125,299	1,269,011	238,079	284,911	10,237	418,468	30,698	996,572	73.4	361,190	310,080	235,767	372,764
Panhandle & Santa Fe.....	10 mos. 955	10,486,315	1,309,661	12,607,321	2,097,026	2,682,577	112,343	4,256,574	278,332	9,100,619	72.2	3,506,702	3,068,942	2,000,340	3,690,849
Atlanta & West Point.....	Oct. 93	199,169	61,214	299,332	30,947	46,026	10,672	93,046	12,804	198,176	66.2	101,156	83,928	66,057	41,114
Western of Alabama.....	Oct. 133	1,731,412	615,836	2,347,248	299,355	452,974	116,622	959,869	136,939	2,012,351	70.9	87,423	488,989	338,085	361,755
Western of Alabama.....	10 mos. 133	1,821,678	575,782	2,397,460	342,420	508,663	121,123	856,122	132,015	2,024,233	76.5	620,438	464,290	68,944	580,879
Atlanta, Birmingham & Coast.....	Oct. 639	365,531	35,670	446,485	106,625	86,383	27,217	161,867	17,178	411,380	92.1	35,105	20,947	6,541	28,615
Atlantic Coast Line.....	Oct. 639	3,648,271	337,275	4,421,540	1,037,120	833,635	285,249	1,685,114	181,427	4,133,159	93.9	268,671	125,629	20,689	167,325
Atlantic Coast Line.....	10 mos. 5,097	4,466,485	899,045	5,365,530	1,124,172	1,469,489	175,898	2,269,907	171,544	5,232,629	88.1	711,229	209,438	354,637	1,040,592
Atlantic Coast Line.....	10 mos. 5,073	49,169,230	12,824,449	67,496,167	10,753,130	14,229,866	1,623,451	24,850,526	1,775,091	53,699,334	79.6	13,796,833	8,808,668	9,064,837	14,593,576
Charleston & Western Carolina.....	Oct. 342	269,639	14,900	296,129	30,204	46,790	7,276	113,843	7,027	205,140	69.3	90,989	73,407	67,867	48,137
Baltimore & Ohio.....	Oct. 5,642	2,225,892	164,605	3,003,196	599,483	447,660	73,628	1,138,015	69,160	2,327,940	77.5	675,256	477,005	432,247	523,608
Baltimore & Ohio.....	10 mos. 5,642	18,149,157	2,350,504	21,500,661	2,900,047	3,999,725	442,672	7,611,904	980,776	16,129,500	73.5	5,822,768	4,826,030	4,597,950	5,611,557
Baltimore & Ohio.....	10 mos. 5,642	173,871,330	22,190,285	209,277,327	25,362,088	43,465,975	4,760,815	73,232,969	7,202,924	155,837,492	74.5	33,439,835	43,241,344	40,902,564	43,131,271
Baltimore & Ohio Chicago Term.	Oct. 75	.....	377,729	377,729	36,937	34,125	2,229	180,660	15,677	275,682	73.0	102,047	42,878	143,169	137,046
Staten Island Rapid Transit.....	Oct. 23	120,870	119,308	240,178	37,603	38,474	1,859	114,568	16,160	188,941	80.5	648,740	95,532	1,014,154	1,132,777
Staten Island Rapid Transit.....	10 mos. 23	1,113,297	1,286,326	2,399,623	395,380	201,844	20,185	1,119,307	155,881	1,892,535	68.3	877,156	685,742	296,526	115,557
Bangor & Aroostook.....	Oct. 613	695,258	40,619	763,878	94,461	101,173	7,209	159,631	25,266	390,326	51.1	373,552	299,481	322,527	316,990
Belt Ry. Co. of Chicago.....	Oct. 613	5,345,327	571,431	6,845,155	1,050,860	1,122,215	59,379	1,551,680	248,194	4,065,525	64.5	2,115,990	1,609,011	1,815,458	1,616,984
Belt Ry. Co. of Chicago.....	10 mos. 613	.....	713,231	713,231	68,704	80,962	3,463	2,961,230	10,705	439,954	65.7	2,193,286	1,714,195	1,422,691	1,689,716
Belt Ry. Co. of Chicago.....	10 mos. 613	.....	.....	6,286,519	539,569	651,287	35,204	2,747,944	99,229	4,093,233	65.1	2,193,286	1,714,195	1,422,691	1,689,716
Bessemer & Lake Erie.....	Oct. 227	1,277,284	8,088	1,302,979	101,269	335,767	18,958	332,336	31,075	816,263	62.6	486,716	409,205	429,205	905,546
Bingham & Garfield.....	Oct. 227	11,673,573	121,141	12,002,387	1,176,710	3,243,889	149,498	3,283,680	340,904	8,098,113	97.5	3,904,274	3,257,640	3,562,280	5,718,253
Bingham & Garfield.....	10 mos. 33	38,552	.....	40,013	7,495	9,307	1,600	10,027	4,808	30,997	77.5	9,016	1,904	18,430	4,939
Bingham & Garfield.....	10 mos. 33	400,362	.....	412,186	86,334	69,387	14,276	100,077	49,426	342,627	83.1	69,536	2,138	162,341	181,182
Boston & Maine.....	Oct. 2,113	4,611,158	1,451,179	6,062,337	1,166,654	1,309,357	70,557	2,507,177	230,332	5,298,171	76.4	1,638,504	1,334,123	1,088,235	1,027,252
Brooklyn Eastern Dist. Terminal.....	Oct. 2,112	4,889,499	15,734,867	65,377,868	9,320,453	12,360,894	794,372	24,735,121	2,172,326	49,541,982	75.5	15,835,899	12,876,425	10,472,553	11,132,108
Buffalo & Susquehanna.....	Oct. 253	119,437	983	124,504	28,161	50,427	2,189	40,276	7,698	128,751	103.4	4,247	6,347	10,100	3,672
Buffalo, Rochester & Pittsburgh.....	Oct. 601	1,220,664	17,164	1,237,828	287,069	510,362	17,548	425,655	78,969	1,315,603	102.3	30,025	51,029	117,142	19,973
Buffalo, Rochester & Pittsburgh.....	10 mos. 601	1,419,536	71,798	1,547,077	241,202	424,456	27,642	570,219	40,840	1,335,619	87.6	191,458	151,462	204,353	337,383
Buffalo, Rochester & Pittsburgh.....	10 mos. 601	13,387,372	912,646	14,831,697	1,911,700	4,788,824	291,085	5,615,622	451,889	13,082,562	88.2	1,749,135	1,328,718	1,496,047	2,803,892
Canadian Pacific Lines in Maine.....	Oct. 233	116,206	21,598	151,670	35,112	41,321	6,976	76,201	3,724	163,334	107.7	11,664	24,964	31,264	38,660
Canadian Pacific Lines in Maine.....	10 mos. 233	1,624,010	305,709	2,059,789	531,676	445,168	59,297	936,572	37,604	2,010,317	97.6	49,468	83,532	226,885	139,419
Canadian Pacific Lines in Vermont.....	Oct. 85	1,113,029	26,242	1,621,519	21,382	30,058	2,771	94,484	3,390	152,085	93.6	10,434	5,684	5,235	3,125
Canadian Pacific Lines in Vermont.....	10 mos. 85	1,404,330	363,553	1,705,940	254,951	307,615	23,468	1,000,506	28,184	1,614,724	94.7	91,216	43,716	39,226	66,477
Central of Georgia.....	Oct. 1,911	1,837,475	329,181	2,372,420	316,526	409,816	68,185	832,392	91,472	1,727,349	72.8	645,071	482,290	480,954	698,989
Central New Jersey.....	Oct. 1,911	17,686,225	3,772,037	23,495,444	2,966,778	4,148,675	743,498	8,634,621	1,002,421	17,596,653	74.9	5,898,791	4,572,226	4,337,587	5,029,532
Central New Jersey.....	10 mos. 690	4,091,056	717,514	5,171,252	443,790	1,124,660	49,124	1,867,093	116,731	3,628,806	70.2	1,542,446	1,045,382	940,676	754,190
Central New Jersey.....	10 mos. 690	38,607,864	7,787,387	49,603,211	4,633,428	10,674,428	473,324	19,146,498	1,175,885	36,363,170	73.3	13,240,041	9,936,708	8,895,605	8,676,212
Central Vermont.....	Oct. 433	558,917	77,814	636,731	129,504	104,125	18,157	334,414	25,881	613,632	75.4	199,845	180,289	158,870	137,174
Chesapeake & Ohio.....	Oct. 433	5,806,411	1,120,564	7,526,975	1,403,924	1,077,903	196,126	3,198,955	245,095	6,135,680	80.1	1,524,702	1,320,105	1,130,523	880,801
Chesapeake & Ohio.....	10 mos. 2,705	10,607,353	652,872	11,260,225	1,584,008	2,526,414	126,116	3,102,785	268,443	7,630,924	68.2	4,082,922	3,230,037	3,393,432	3,835,322
Chesapeake & Ohio.....	10 mos. 2,702	102,828,672	7,295,486	114,568,688	16,437,579	25,379,877	1,297,816	30,041,325	2,899,652	76,247,414	66.6	38,321,274	30,907,477	32,344,629	30,474,729
Chicago & Alton.....	Oct. 1,029	1,856,086	453,183	2,309,269	349,560	566,945	68,813	923,835	57,407	1,968,643	76.8	594,548	488,452	305,182	407,341
Chicago & Alton.....	10 mos. 1,039	16,237,125	5,229,964	23,693,816	3,148,376	5,064,662	73,375	8,949,484	615,289	18,626,038	78.6	5,067,778	4,009,121	2,195,563	2,904,880
Chicago & Alton.....	10 mos. 945	1,886,886	299,385	2,377,529	278,368	486,000	84,233	904,677	71,901	1,833,154	77.1	545,375	429,777	342,210	547,761
Chicago & Alton.....	10 mos. 945	17,257,504	3,482,926	22,484,259	2,750,564	5,018,969	835,039	8,750,152	700,550	18,133,124	80.6	4,352,135	3,195,642	1,901,846	1,993,993
Chicago & Illinois Midland.....	Oct. 133	171,380	6,140	181,980	39,071	78,179	11,281	55,327	12,665	196,522	108.0	14,542	18,016	19,982	15,513
Chicago & Illinois Midland.....	10 mos. 133	1,174,662	82,262	1,403,450	371,382	685,551	92,537	519,285	129,588	1,798,336	138.0	494,886	555,579	640,360	355,118
Chicago & North Western.....	Oct. 8,469	11,279,659	1,850,476	14,639,930	2,016,637	2,647,114	187,083	5,464,924	363,517	10,682,322	73.0	3,957,608	3,066,539	2,663,230	2,908,533
Chicago & North Western.....	10 mos. 8,464	92,936,346	21,186,703	127,668,520	17,966,726	24,823,050	2,109,070	48,519,797	3,520,818	97,414,701	76.3	30,253,819	21,957,932	19,249,217	20,960,701

Revenues and Expenses 1927-Continued

RAILWAY AGE									
83, No. 24									
Revenues and Expenses of Railways									
MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1927—CONTINUED									
Name of road	Average mileage operated during period	Operating revenues		Operating expenses		Operating ratio	Net from railway operation	Operating income (or loss)	Net operating income, 1926
		Freight	Passenger	Freight	Passenger				
Chicago, Burlington & Quincy	1,991	\$12,459,213	\$1,770,552	\$15,570,593	\$2,059,020	70.8	\$5,658,807	\$4,374,445	\$3,997,460
Chicago, Great Western	1,496	16,144,810	2,719,200	18,864,010	2,882,409	70.5	38,759,478	28,572,921	25,018,491
Chicago, Indianapolis & Louisville	650	1,307,470	190,702	1,498,172	199,343	71.4	4,855,837	3,711,927	3,587,743
Chicago, Milwaukee & St. Paul	1,204	10,464,291	1,595,731	12,060,022	1,742,457	70.5	24,992,994	17,355,686	12,063,224
Chicago, Rock Island & Pacific	1,746	16,897,369	3,916,142	20,813,511	2,931,119	70.8	485,837	396,979	277,327
Chicago, Rock Island & Gulf	507	4,520,573	70,505	4,591,078	149,343	71.4	4,350,407	3,711,927	3,587,743
Chicago, St. Paul, Minn. & Omaha	1,746	16,897,369	3,916,142	20,813,511	2,931,119	70.5	24,992,994	17,355,686	12,063,224
Chic., St. Paul, Minn. & Omaha	1,746	16,897,369	3,916,142	20,813,511	2,931,119	70.8	485,837	396,979	277,327
Clinchfield Railroad	309	659,863	20,618	680,481	117,355	71.4	4,350,407	3,711,927	3,587,743
Colorado & Southern	491	748,801	20,193	768,994	149,343	70.5	24,992,994	17,355,686	12,063,224
Denver & Denver City	271	1,226,278	166,373	1,392,651	212,585	70.8	4,855,837	3,711,927	3,587,743
Wichita Valley	167	1,262,576	23,224	1,285,800	150,748	71.4	4,350,407	3,711,927	3,587,743
Columbus & Greenville	23	845,928	15,942	861,870	117,355	70.5	24,992,994	17,355,686	12,063,224
Conemaugh & Black Lick	23	845,928	15,942	861,870	117,355	70.8	4,855,837	3,711,927	3,587,743
Delaware & Hudson	881	3,272,525	255,218	3,527,743	489,154	71.4	4,350,407	3,711,927	3,587,743
Delaware, Lackawanna & Western	2,560	2,997,390	299,669	3,297,059	448,818	70.5	24,992,994	17,355,686	12,063,224
Delaware & Rte Grande	255	1,456,257	354,303	1,810,560	219,104	70.8	4,855,837	3,711,927	3,587,743
Denver & Salt Lake	313	1,143,387	143,208	1,286,595	157,314	71.4	4,350,407	3,711,927	3,587,743
Detroit & Mackinac	313	1,143,387	143,208	1,286,595	157,314	70.5	24,992,994	17,355,686	12,063,224
Detroit & Toledo	495	7,253,704	55,009	7,308,713	1,049,543	70.8	4,855,837	3,711,927	3,587,743
Duluth & Iron Range	274	5,612,789	60,413	5,673,202	709,668	71.4	4,350,407	3,711,927	3,587,743
Duluth, Missabe & Northern	306	13,575,663	1,825,119	15,400,782	2,134,359	70.5	24,992,994	17,355,686	12,063,224
Duluth, Winnipeg & Pacific	178	1,854,697	185,514	2,040,211	249,443	70.8	4,855,837	3,711,927	3,587,743
Elgin, Joliet & Eastern	269	1,362,405	54,533	1,416,938	199,221	71.4	4,350,407	3,711,927	3,587,743
Erie Railroad	2,047	8,204,568	863,315	9,067,883	1,299,443	70.5	24,992,994	17,355,686	12,063,224
Chicago & Erie	45	299,604	46,839	346,443	51,678	70.8	4,855,837	3,711,927	3,587,743
New Jersey & New York	134	3,240,764	498,229	3,738,993	498,646	71.4	4,350,407	3,711,927	3,587,743
Susquehanna & Western	134	3,240,764	498,229	3,738,993	498,646	70.5	24,992,994	17,355,686	12,063,224

Revenues and Expenses of Railways

MONTH OF OCTOBER AND THE MONTHS OF CALENDAR YEAR, 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Net operating income (or loss)	Net operating income, 1926
		Freight	Passenger	Total (inc. misc.)	Way and structures	Maintenance of equipment	Traffic				
Evansville, Indianapolis & Terre Haute, Oct. 10 mos.	146	\$184,306	\$4,064	\$188,370	\$24,100	\$38,771	\$2,131	76.9	\$44,864	\$44,166	\$23,406
Florida East Coast, Oct. 10 mos.	146	2,083,651	50,877	2,134,528	275,809	281,570	22,119	66.0	748,750	678,594	227,416
Fort Smith & Western, Oct. 10 mos.	850	9,358,328	4,371,621	13,729,949	3,265,233	2,539,680	318,095	80.0	3,086,496	1,788,218	4,387,508
Galveston Wharf, Oct. 10 mos.	249	146,635	12,845	159,480	31,508	33,483	5,285	75.8	40,601	34,463	42,105
Georgia R. R., Oct. 10 mos.	328	410,649	68,859	479,508	47,914	84,279	22,438	71.9	146,208	118,538	112,239
Georgia & Florida, Oct. 10 mos.	445	1,371,930	161,294	1,533,224	287,463	230,309	100,572	79.6	329,160	251,425	198,448
Grand Trunk Western, Oct. 10 mos.	347	1,569,711	181,978	1,751,689	269,045	399,577	41,320	75.7	448,717	364,300	228,398
Atlantic & St. Lawrence, Oct. 10 mos.	166	1,615,413	299,242	1,914,655	418,438	367,907	63,233	93.0	148,739	21,069	—577,409
Chic., Det. & Canada Gr. Tr. Jct., Oct. 10 mos.	59	284,721	1,497	286,218	47,916	17,816	4,648	54.5	148,533	138,127	109,926
Detroit, Grand Haven & Mil., Oct. 10 mos.	189	674,355	24,003	698,358	115,605	64,947	13,064	65.5	263,010	250,006	154,720
Great Northern, Oct. 10 mos.	8163	14,009,626	986,615	15,000,241	1,331,349	3,027,554	255,574	56.0	7,032,092	6,037,040	5,501,040
Green Bay & Western, Oct. 10 mos.	234	145,023	3,396	148,419	32,492	26,422	4,239	66.9	32,424,623	23,971,515	22,908,286
Gulf & Ship Island, Oct. 10 mos.	307	264,106	34,185	298,291	84,373	52,542	5,366	73.2	41,582	33,582	24,863
Gulf Mobile & Northern, Oct. 10 mos.	707	5,495,316	341,252	5,836,568	1,098,918	941,499	301,989	79.9	1,049,607	184,834	204,817
Hocking Valley, Oct. 10 mos.	348	1,750,940	69,431	1,820,371	241,229	378,783	16,795	60.1	806,634	650,851	526,417
Illinois Central, Oct. 10 mos.	4,902	102,878,610	19,269,567	122,148,177	15,389,025	30,724,316	4,608,922	62.2	3,773,483	2,798,782	2,800,274
Ya oo & Mississippi Valley, Oct. 10 mos.	1,710	2,347,929	357,859	2,705,788	649,276	448,501	49,801	72.8	791,846	639,592	548,413
Illinois Central System, Oct. 10 mos.	6,625	13,798,085	2,162,059	15,960,144	2,301,257	3,839,596	296,294	73.5	3,565,619	1,810,689	1,878,803
Kansas City, Mexico & Orient, Oct. 10 mos.	272	243,921	5,975	249,896	67,014	96,337	9,230	101.1	—2,821	—7,051	15,491
Kans. City, Mex. & Orient of Tex., Oct. 10 mos.	465	530,698	21,018	551,716	185,117	111,131	10,133	97.7	58,032	16,158	45,550
Kansas City Southern, Oct. 10 mos.	784	1,459,148	99,214	1,558,362	185,497	275,834	56,873	64.9	600,880	486,344	417,615
Texas & Ft. Smith, Oct. 10 mos.	81	2,221,410	97,502	2,318,912	2,648,304	2,648,304	4,314,609	60.2	5,374,796	4,227,881	3,650,228
Kansas, Oklahoma & Gulf, Oct. 10 mos.	326	293,884	4,200	298,084	81,622	17,490	11,318	60.8	119,278	109,511	93,523
Lake Superior & Ishpeming, Oct. 10 mos.	160	2,302,476	46,096	2,348,572	688,228	202,254	97,835	78.7	1,891,461	1,712,215	1,505,316
Lake Terminal, Oct. 10 mos.	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh & Hudson River, Oct. 10 mos.	96	2,690,525	20,149	2,710,674	352,170	437,358	21,649	66.4	952,464	778,809	539,795
Lehigh & New England, Oct. 10 mos.	216	527,146	1,081	528,227	78,945	58,903	5,615	61.9	205,410	178,672	158,409
Lehigh Valley, Oct. 10 mos.	1,363	5,679,390	583,624	6,263,014	1,063,543	1,603,543	165,197	78.1	1,465,876	1,325,732	1,239,297
Louisiana & Arkansas, Oct. 10 mos.	302	2,744,587	146,307	2,890,894	53,649	41,734	11,536	60.4	118,240	100,856	89,480
Louisiana Ry. & Nav. Co., Oct. 10 mos.	337	2,407,947	127,287	2,535,234	337,600	307,302	35,298	65.0	113,526	91,526	73,159
					599,626	551,434	48,192	84.5	417,118	193,505	—89,772

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR, 1927—CONTINUED

Name of road	Average mileage operated during period.	Operating revenues			Operating expenses				Operating ratio.	Net from railway operation	Income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.	
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Maintenance of equipment.	Traffic.	Transportation.						General.	Total.
Louisiana Ry. & Nav. Co. of Tex.	206	\$118,418	\$5,502	\$123,920	\$22,478	\$15,502	\$2,991	\$42,195	\$5,668	\$88,821	69.9	\$38,301	\$18,690	\$6,091
Louisville & Nashville	206	838,197	45,737	883,934	219,265	133,159	3,075	400,004	60,802	845,035	91.8	75,715	101,219	90,795
Louisville & Nashville	5,064	10,750,569	1,574,773	12,325,342	1,864,345	2,688,286	266,429	4,421,073	336,468	9,614,469	73.7	3,433,757	2,657,531	2,768,301
Louisville & Nashville	5,062	99,051,946	16,869,475	115,921,421	18,602,725	27,396,840	2,572,345	42,427,179	3,369,314	94,766,176	77.2	27,920,885	21,523,082	23,551,578
Louisville, Henderson & St. Louis	199	332,498	44,447	376,945	68,313	55,582	8,938	132,765	13,825	281,113	71.2	113,822	68,959	77,526
Maine Central	1,121	2,837,136	503,513	3,340,649	621,779	526,274	85,885	1,138,855	122,272	2,499,908	71.0	1,020,023	705,226	510,084
Maine Central	1,121	1,353,147	224,267	1,577,414	320,943	320,943	1,761	668,340	51,032	1,300,908	74.8	437,869	313,558	466,018
Maine Central	1,121	12,309,462	3,102,386	15,411,848	2,733,530	3,188,261	150,576	6,763,118	554,479	13,403,399	78.8	3,606,573	2,465,449	2,655,260
Midland Valley	364	330,748	20,915	351,663	46,050	29,519	7,724	80,409	14,155	176,960	48.7	186,197	170,383	116,597
Minneapolis & St. Louis	364	2,943,768	268,733	3,212,501	554,481	360,765	74,338	843,944	156,189	1,986,077	59.7	1,342,245	1,153,407	943,781
Minneapolis & St. Louis	1,627	1,375,480	72,082	1,447,562	182,822	251,107	38,280	578,087	43,714	1,093,113	71.9	426,195	348,728	292,326
Minneapolis & St. Louis	1,627	10,565,688	870,394	11,436,082	1,980,770	2,624,411	356,966	5,375,488	453,435	10,780,422	89.3	1,292,360	704,124	174,536
Minneapolis, St. Paul & S. S. Marie.	4,396	5,181,017	397,125	5,578,142	554,601	747,143	70,137	1,764,213	114,623	3,272,982	54.9	2,689,780	2,335,743	2,100,252
Duluth, South Shore & Atlantic.	589	3,253,324	4,377,019	7,630,343	5,548,230	7,293,115	750,206	14,822,245	1,134,419	29,676,800	72.2	11,486,584	8,943,500	7,599,287
Duluth, South Shore & Atlantic.	589	3,253,324	4,377,019	7,630,343	5,548,230	7,293,115	750,206	14,822,245	1,134,419	29,676,800	72.2	11,486,584	8,943,500	7,599,287
Duluth, South Shore & Atlantic.	589	3,253,324	4,377,019	7,630,343	5,548,230	7,293,115	750,206	14,822,245	1,134,419	29,676,800	72.2	11,486,584	8,943,500	7,599,287
Spokane International.	165	86,052	8,838	94,890	19,069	7,009	3,616	33,396	7,107	71,202	70.1	30,316	24,736	13,794
Mississippi Central.	161	1,252,327	93,217	1,345,544	220,315	268,035	86,057	367,472	78,125	1,020,127	73.3	371,722	281,765	316,092
Missouri & North Arkansas.	364	1,242,932	12,194	1,255,126	146,977	51,761	9,591	56,402	9,311	1,271,127	100.1	136,971	112,435	15,397
Missouri & North Arkansas.	1,799	2,655,609	289,616	2,945,225	579,101	711,518	68,743	7,071,133	94,137	2,213,336	69.6	96,671	73,674	146,215
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,008,952	3,421,417	27,430,369	4,200,366	6,310,210	656,321	7,503,381	962,693	19,882,677	68.8	9,801,937	7,737,797	7,627,866
Missouri-Kansas-Texas	1,799	24,												

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR, 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues				Maintenance of		Operating expenses			Operating ratio	Net from railway operation	Net operating income (or loss)	Net operating income, 1926	
		Freight	Passenger	Total	(Inc. misc.)	Way and structures	Equip-	Traffic	Trans-	General					Total
Michigan Central	1,855	\$5,239,916	\$1,562,480	\$7,689,038	\$957,663	\$1,455,144	\$1,455,144	\$122,789	\$2,504,120	\$221,385	\$5,345,417	69.5	\$2,343,621	\$1,790,565	\$1,911,181
10 mos.	1,855	51,771,336	16,857,863	76,303,217	9,079,770	14,121,650	14,121,650	1,251,724	24,737,253	2,569,335	52,689,325	69.1	23,613,892	18,381,998	19,941,521
Oct.	231	2,312,014	221,930	2,638,099	389,559	705,388	705,388	110,599	2,093,081	110,599	2,093,081	79.3	545,018	353,084	822,418
Pittsburgh & Lake Erie	231	2,312,222	2,324,860	27,417,407	3,920,573	8,440,336	8,440,336	250,955	8,785,693	861,290	22,274,443	81.2	5,142,964	3,415,507	7,158,912
10 mos.	231	24,213,222	23,324,860	274,174,070	39,205,573	84,403,336	84,403,336	2,509,555	86,350,804	8,612,900	222,744,443	81.2	54,501,800	35,308,400	74,622,232
New York, Chicago & St. Louis	1,690	4,589,670	126,559	4,885,762	709,280	843,336	843,336	120,000	1,619,128	146,462	3,432,470	70.3	1,453,292	1,183,162	1,247,195
10 mos.	1,690	42,266,288	1,265,559	48,855,762	7,092,800	8,433,336	8,433,336	1,200,000	15,576,466	1,464,620	34,324,700	72.3	12,555,022	9,962,685	8,610,458
Oct.	217	6,812,613	3,949,682	12,146,071	1,647,461	2,038,361	2,038,361	91,485	3,947,180	298,185	8,205,862	67.6	3,940,209	3,432,388	2,774,711
N. Y., New Haven & Hartford	2,175	62,866,946	41,169,481	116,566,321	16,137,849	22,259,999	22,259,999	907,958	39,493,086	3,239,428	83,830,426	71.9	32,735,895	27,529,014	20,867,758
10 mos.	2,175	628,669,460	411,694,810	1,165,566,321	161,378,490	222,599,999	222,599,999	9,079,580	394,930,860	32,394,280	838,304,260	71.9	327,358,950	275,290,140	208,677,580
New York Connecting	20	255,190	.....	291,280	36,897	15,926	15,926	.....	37,739	1,815	92,377	31.7	198,903	162,903	148,896
10 mos.	20	2,199,836	.....	2,509,053	269,281	139,180	139,180	.....	533,677	17,422	959,960	38.3	1,549,093	1,165,093	1,032,781
Oct.	569	863,972	75,156	1,117,567	194,969	216,989	216,989	17,847	489,008	35,154	958,166	85.7	159,401	159,357	98,963
New York, Ontario & Western	569	7,063,624	2,458,379	11,311,028	1,693,393	2,209,741	2,209,741	181,244	4,758,762	349,375	9,228,607	81.6	2,082,421	1,629,952	1,068,333
10 mos.	569	70,636,240	24,583,790	113,110,280	16,933,930	22,097,410	22,097,410	1,812,440	47,587,620	3,493,750	92,286,607	81.6	20,824,210	16,299,520	10,683,330
Norfolk & Western	2,241	8,801,222	519,922	9,668,225	1,616,926	1,507,293	1,507,293	99,665	2,412,808	205,887	5,792,155	59.9	3,876,070	2,924,796	3,938,988
10 mos.	2,241	85,457,594	5,199,922	96,682,516	16,169,260	15,072,930	15,072,930	996,650	24,128,080	2,058,887	57,921,550	62.3	35,738,362	27,026,226	33,368,502
Oct.	931	726,544	47,930	831,863	100,242	135,797	135,797	26,777	584,676	29,733	584,676	70.3	247,187	185,597	153,458
Norfolk Southern	931	7,003,761	551,429	8,026,680	987,173	1,248,316	1,248,316	255,415	2,966,344	299,478	5,665,278	70.6	2,361,402	1,809,229	1,489,819
10 mos.	931	70,037,610	5,514,290	80,266,800	9,871,730	12,483,160	12,483,160	2,554,150	29,663,440	2,994,780	56,652,780	70.6	23,614,020	18,092,290	14,898,819
Northern Pacific	6,667	9,002,591	835,416	11,515,225	945,268	1,543,035	1,543,035	174,289	2,976,805	243,721	5,941,776	51.6	5,573,449	4,354,151	4,586,504
10 mos.	6,667	62,059,202	9,880,687	78,816,946	6,435,762	10,831,978	10,831,978	1,712,890	26,467,481	2,317,710	57,109,561	72.5	21,707,385	14,119,784	17,139,640
Oct.	477	516,146	137,627	709,577	108,230	88,317	88,317	12,123	267,366	21,446	497,482	70.1	212,095	171,513	153,086
Northwestern Pacific	477	3,581,437	1,619,301	5,726,815	1,020,549	821,332	821,332	79,828	2,304,067	205,900	4,430,251	77.4	1,296,564	888,307	769,704
10 mos.	477	35,814,370	16,193,010	57,268,150	10,205,490	8,213,320	8,213,320	798,280	23,040,670	2,059,000	44,302,510	77.4	12,965,640	8,883,070	7,697,040
Pennsylvania R. R.	10,500	40,906,039	11,339,076	58,131,572	7,205,838	11,712,627	11,712,627	810,543	20,676,656	1,581,339	42,571,086	73.2	15,560,486	11,822,361	10,744,328
10 mos.	10,500	393,816,675	118,502,065	564,264,973	72,890,357	118,559,641	118,559,641	7,924,572	20,599,440	15,808,876	428,156,435	73.9	136,108,538	104,205,160	92,168,257
Baltimore, Chesapeake & Atlantic	130	96,293	29,756	134,998	14,778	19,807	19,807	1,382	83,044	2,653	121,864	90.3	13,134	13,134	12,798
10 mos.	130	841,591	333,536	1,252,161	124,900	335,016	335,016	19,806	796,142	34,800	1,310,664	104.7	-58,503	-109,189	-119,212
Long Island	403	1,160,699	2,105,642	3,462,246	389,464	522,102	522,102	29,860	1,462,937	73,920	2,489,474	70.3	1,053,272	838,592	630,574
10 mos.	403	10,007,929	22,375,747	34,383,676	4,635,762	5,340,978	5,340,978	329,975	14,022,167	816,710	25,263,310	70.3	9,332,322	6,933,820	5,271,577
West Jersey & Seashore	378	4,827,192	336,930	5,431,134	143,858	1,662,305	1,662,305	205,918	4,636,878	31,506	787,442	92.5	63,692	38,108	63,692
10 mos.	378	48,271,920	3,369,300	54,311,340	1,438,580	16,623,050	16,623,050	2,059,180	46,368,780	315,060	7,874,442	92.5	636,920	381,080	739,450
Peoria & Pekin Union	19	22,399	1,387	170,310	34,041	15,611	15,611	2,904	71,264	8,176	133,906	78.7	36,314	16,314	42,475
10 mos.	19	223,990	13,870	1,703,100	340,410	156,110	156,110	29,040	712,640	81,760	1,339,060	78.7	363,140	163,140	424,750
Pere Marquette	2,243	3,542,823	268,742	3,811,565	369,903	84,114	84,114	62,462	1,398,075	107,429	2,709,492	64.4	1,500,088	1,216,335	1,182,947
10 mos.	2,243	35,092,320	2,687,420	38,115,740	3,699,030	841,140	841,140	624,620	13,980,750	1,115,170	26,536,060	69.6	11,617,170	9,552,564	8,363,877
Pittsburgh & Shawmut	102	183,094	2,047	187,874	31,155	50,664	50,664	1,609	47,695	7,659	138,786	73.3	49,092	47,926	53,110
10 mos.	102	1,830,940	20,470	1,851,410	311,550	506,640	506,640	16,090	476,950	76,590	1,387,860	73.3	490,920	479,260	43,650
Pittsburgh & West Virginia	92	2,713,835	6,553	3,127,375	27,884	47,558	47,558	11,243	69,203	2,715	202,976	65.0	1,099,299	287,078	410,250
10 mos.	92	27,138,350	65,530	31,273,750	278,840	475,580	475,580	112,430	692,030	27,150	2,029,760	65.0	10,992,990	2,870,780	284,210
Pittsburgh, Shawmut & Northern	198	1,485,407	24,058	1,543,639	319,524	300,726	300,726	15,869	570,111	6,143	134,914	77.3	39,620	36,481	28,690
10 mos.	198	14,854,070	240,580	15,436,390	3,195,240	3,007,260	3,007,260	158,690	5,701,110	66,627	1,272,867	82.5	270,772	240,688	146,042
Quincy, Omaha & Kansas City	249	59,217	10,077	77,164	30,546	5,529	5,529	8,214	291,540	25,810	743,172	89.2	8,308	2,473	6,579
10 mos.	249	491,194	108,846	683,961	313,577	107,310	107,310	82,140	2,915,400	258,100	7,431,720	108.9	-61,211	-119,816	-150,574
Reading	1,139	7,296,187	730,020	8,403,616	1,123,287	1,607,717	1,607,717	78,363	2,934,173	189,886	5,953,785	70.8	2,449,831	1,924,565	2,111,639
10 mos.	1,139	66,866,681	7,449,268	77,962,068	10,845,179	17,324,118	17,324,118	818,840	29,145,799	2,028,458	60,197,440	77.2	17,764,628	13,292,080	14,286,691
Atlantic City	161	1,294,041	2,247,526	3,739,317	873,959	325,935	325,935	75,497	2,031,555	58,437	3,366,807	90.0	372,510	-5,733	-307,160
10 mos.	161	12,940,410	22,475,260	37,393,170	8,739,590	3,259,350	3,259,350	754,970	20,315,550	584,370	33,668,070	90.0	3,725,100	-57,330	-307,160
Perkiomen	41	114,123	3,182	120,745	8,869	6,212	6,212	114	45,734						

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR, 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues				Operating expenses				Operating income (or loss)	Net railway operation	Net ry. operating income, 1926
		Freight	Passenger	Total (inc. misc.)	Way and structures	Traffic	Trans- portation	General	Total			
St. Louis, Southwestern of Texas, Oct. 10 mos.	807	\$699,231	\$71,248	\$824,887	\$110,107	\$30,000	\$279,477	\$34,441	\$824,405	\$70.6	\$242,482	\$141,147
Seaboard Air Line, Oct. 10 mos.	4,306	5,106,448	549,379	6,146,067	1,665,384	2,473,654	3,357,966	5,944,410	5,944,410	96.7	201,657	\$254,785
Southern Ry., Oct. 10 mos.	4,288	39,138,087	8,122,288	51,909,816	6,366,394	2,077,999	20,109,534	2,070,318	39,105,853	75.3	12,803,963	9,034,390
Alabama Great Southern, Oct. 10 mos.	6,771	10,115,422	2,051,369	13,165,816	1,687,068	219,091	4,191,157	355,627	8,646,810	65.7	4,519,006	3,569,368
Cinn., New Orleans & Tex. Pacific, Oct. 10 mos.	338	14,703,339	257,604	18,167,763	3,077,288	44,073	5,316,424	57,137	12,989,903	71.5	517,860	397,478
Georgia Southern & Florida, Oct. 10 mos.	401	3,077,757	86,081	4,222,991	93,378	4,687	1,390,807	3,969	313,202	70.3	5,492,742	4,176,874
New Orleans & Northeastern, Oct. 10 mos.	204	435,124	75,661	545,293	60,236	11,151	1,610,545	9,744	3,496,025	87.5	501,298	190,109
Northern Alabama, Oct. 10 mos.	110	1,285,565	8,379	1,397,900	28,130	2,232	3,302	2,713	76,279	54.6	63,511	28,053
Southern Pacific, Oct. 10 mos.	8,337	16,280,434	3,086,716	21,070,137	2,293,032	319,978	6,550,156	15,048	308,906	56.6	236,387	185,846
So. Pacific Steamship Lines, Oct. 10 mos.	...	832,887	46,089	1,054,081	18,160	16,037	632,590	38,714	969,704	92.0	84,377	74,340
Texas & New Orleans, Oct. 10 mos.	4,374	5,111,946	950,762	6,593,133	981,738	166,956	2,236,375	253,271	4,736,109	71.8	1,857,024	1,174,337
Spokane, Portland & Seattle, Oct. 10 mos.	554	767,635	91,620	922,441	94,200	10,927	231,677	22,078	461,757	50.1	460,684	341,174
Tennessee Central, Oct. 10 mos.	296	255,411	22,353	292,217	63,100	5,999	108,557	13,162	245,950	84.2	46,267	39,322
Terminal Railroad Ass'n of St. L., Oct. 10 mos.	55	2,399,148	244,029	2,784,009	562,664	89,172	997,988	127,883	2,254,303	84.0	529,606	474,348
Texas Mexican, Oct. 10 mos.	162	966,905	64,367	1,137,820	217,881	2,431	478,448	34,904	844,727	72.3	351,718	233,509
Toledo, Peoria & Western, Oct. 10 mos.	239	172,098	2,299	1,885,081	42,368	9,707	70,891	8,982	155,841	85.4	16,732	26,732
Toledo Terminal, Oct. 10 mos.	28	...	...	133,258	22,309	14,014	61,550	5,478	103,881	77.9	29,377	11,079
Trinity & Brazos Valley, Oct. 10 mos.	367	345,532	1,112	2,668,986	36,367	5,422	105,583	11,186	191,578	52.2	175,408	133,755
Ulster & Delaware, Oct. 10 mos.	128	39,493	3,768	77,131	13,549	1,433	43,338	5,251	77,719	100.8	—588	—9,436
Union Railroad of Penna., Oct. 10 mos.	45	430,674	230,631	1,094,776	193,373	16,532	500,334	31,033	923,561	91.7	83,215	16,787
Union Pacific, Oct. 10 mos.	3,712	12,782,836	1,234,084	14,854,900	1,026,840	167,596	3,322,157	334,890	7,188,046	48.4	7,666,854	5,901,442
Oregon Short Line, Oct. 10 mos.	2,539	72,977,744	13,293,543	94,248,795	11,248,012	1,758,113	24,709,329	3,129,776	61,131,238	64.9	33,117,537	22,900,570
Oregon, Wash. R. R. & Nav. Co., Oct. 10 mos.	2,538	23,875,864	3,573,579	29,666,921	4,994,172	48,545	1,054,056	1,280,809	2,245,392	52.5	2,031,102	1,472,860
Los Angeles & Salt Lake, Oct. 10 mos.	2,237	2,650,019	271,326	3,131,868	336,523	71,489	950,993	126,096	1,857,261	59.3	1,274,607	638,428
St. Joseph & Grand Island, Oct. 10 mos.	258	406,600	13,662	442,370	47,248	3,061	123,053	15,012	236,072	53.4	206,298	171,781
Utah, Oct. 10 mos.	545	1,579,551	40,741	1,732,285	170,477	13,351	358,678	33,106	973,756	56.2	758,559	633,505
Virginian, Oct. 10 mos.	545	1,579,551	40,741	1,732,285	170,477	13,351	358,678	33,106	973,756	56.2	758,559	633,505
Wabash, Oct. 10 mos.	2,524	5,088,126	598,903	6,100,620	701,335	1,007,488	1,272,114	184,684	4,231,598	69.4	1,869,082	1,631,601
Ann Arbor, Oct. 10 mos.	293	469,360	19,383	513,953	56,570	11,091	188,483	12,093	384,987	74.9	128,966	104,864
Western Maryland, Oct. 10 mos.	804	1,714,852	32,590	1,803,013	286,095	341,676	1,830,315	115,671	3,659,488	77.2	1,078,536	827,796
Western Pacific, Oct. 10 mos.	1,042	1,823,600	133,032	2,151,965	254,277	48,330	589,827	43,897	1,265,174	58.8	886,791	758,311
Wheeling & Lake Erie, Oct. 10 mos.	511	1,363,115	23,893	1,503,127	232,590	393,177	486,313	43,728	1,189,316	79.1	313,811	195,807
	511	14,303,509	314,658	15,729,616	2,060,374	337,544	4,830,256	454,688	11,601,649	73.8	4,127,967	2,833,140

3,875,037

News of the Week

(Continued from page 1173)

ruary 15, 1854; the trains, in the 14 months up to that date, having used the line of the "Public Works" between Hollidaysburg and Johnstown. The entire Public Works system was bought by the railroad company from the state in 1857.

William D. Prenter Dies

William D. Prenter, former president of the Brotherhood of Locomotive Engineers, and head of its financial and industrial enterprises, with headquarters at Cleveland, O., died on December 7. Mr. Prenter was formerly first vice-president and treasurer of the brotherhood and was chosen president in June, 1925, to succeed the late Warren S. Stone. Mr. Stone was formerly grand chief engineer and served in that capacity for a number of years. Then with the multiplication of the organization's financial and industrial activities, a reorganization was brought about, which placed Mr. Stone with the title of president in general charge of all the union's activities, leaving the purely labor activities to a newly elected grand chief engineer. It was to this position—really that of a financial and industrial executive—to which Mr. Prenter succeeded at Mr. Stone's death. During the past year dissatisfaction grew in the ranks of the brotherhood at its numerous "outside" activities and at the convention held at Cleveland in June this year it re-adopted its former method of organization, making the grand chief engineer its principal executive officer and vacating the office of president held by Mr. Prenter, who has since that time, due to his declining health, been in retirement.

Lake Cargo Coal Rate Hearings

The second part of the hearing before commissioners Campbell and McManamy of the Interstate Commerce Commission on the reduction of 20 cents a ton on lake cargo coal rates proposed by the railroads serving the southern coal fields, to meet a similar reduction ordered by the commission from the Pennsylvania and Ohio fields, was held at Minneapolis, Minn., last week. The third part opened at Washington on December 9 when both sides submitted rebuttal testimony.

Witnesses at Minneapolis averred that industries and individuals in the northwest need and are entitled to a reduction in freight rates and also the maintenance of an active competitive market for coal from the Appalachian fields. Herman Mueller, traffic manager of the St. Paul Association, and Frank B. Townsend, director of traffic of the Minneapolis Traffic Association, said that freight rates to the Twin Cities from all major producing fields have been subjected, within the past 15 years, to increases ranging as high as 107 per cent on some grades of coal. The Twin Cities consume nearly 3,000,000 tons of coal yearly.

Railroad representatives showed that operators in the southern coal fields in the last three years have taken a big share of business away from the northern fields and consequently from the northwest railroads.

The Great Northern and the Northern Pacific in 1923 used 2,490,000 tons of stoker coal, of which only 130,000 tons came from the southern fields; but in 1926, of the 2,193,000 tons used, 1,425,000 came from the southern fields.

Arbitrators Fail to Agree

The Board of Arbitration which has been considering the demands of Western firemen for an increase in pay of one dollar a day, announced, at Denver on December 5, that no agreement had been reached, either on the rates of wages or on working conditions. As to the dollar-a-day, Messrs. Boone and Phillips, the arbitrators chosen by the firemen's brotherhood, agreed on an increase of 45 cents for road freight firemen and 40 cents a day for the helpers and hostlers. Messrs. Fletcher and Higgins, the two chosen by the railroads, would agree to no increase for road firemen though willing to give $7\frac{1}{2}$ per cent to all the others.

Messrs. H. P. Burke and Paul A. Sinsheimer, the two other arbitrators, agreed on 30 cents a day for passenger firemen and 35 cents a day for the other classes. They would not subscribe jointly to any greater or lesser increases, approximating the concession offered on behalf of the railroads. Mr. Sinsheimer, in a separate statement, declared in favor of increases from 35 cents to 45 cents.

Winners in Essay Contest Announced

The American Railway Association has announced the winners in the nation-wide contest held among school and college students for the best essays on preventing highway grade crossing accidents. The winners, as decided by a special committee composed of Secretary of Commerce Herbert Hoover, (chairman); Thomas P. Henry, president of the American Automobile Association, and Walter G. King, past president of the National Safety Council, after considering hundreds of essays received from all parts of the country, are as below:

Grammar School:

- 1st prize, \$250.—Clifford C. Clarke, Erie, Pa.
- 2nd prize, \$100.—Ethel Kizer, Lewistown, Mont.
- 3rd prize, \$50.—Barbara Ellen Rawlins, Ennis, Tex.

High School:

- 1st prize, \$250.—Mary Hill, St. John, Kansas.
- 2nd prize, \$100.—Dan Rhodes, Fort Dodge, Iowa.
- 3rd prize, \$50.—Donald E. Johnson, Maryville, Mo.

College:

- 1st prize, \$250.—Elbert E. Seger, Kalamazoo College, Kalamazoo, Michigan.
- 2nd prize, \$100.—John M. Zakovich, St. Mary's College, Winona, Minnesota.
- 3rd prize, \$50.—Neal P. Stanford, Northwestern University, Evanston, Ill.

Under the rules prescribed the essays were limited to 250 words. The principals of each grammar and high school selected the best essays for their schools and sent them to the county superintendent of schools who in turn selected the best essays for the county and forwarded them to the American Railway Association. Colleges and universities also followed a similar plan of elimination.

Program for the Wood Preservers' Convention

The annual convention of the American Wood Preservers' Association will be held at the Mount Royal hotel, Montreal, on January 24-26, 1928. Arrangements have been made with the Michigan Central-Canadian Pacific for special cars or for a special train leaving Chicago at 5:40 p. m. on January 22. The program, so far as it has been arranged, is as follows:

Tuesday Morning, January 24

Opening business.
President's address: O. C. Steinmayer, superintendent timber preservation, Canada Creosoting Co., Montreal, Que.
Report of secretary-treasurer: E. J. Stocking.
Appointment of committees.

Tuesday Afternoon

Report of Committee on Preservatives, L. C. Drefahl, chairman, chemist, Grasselli Chemical Company, Cleveland, O.
Paper on Some Experiments on the Toxicity of Inorganic Salts of Arsenic, by E. Bateman, chemist in forest products, Forest Products Laboratory, Madison, Wis., and R. Baechler.
Paper on the Determination of the Toxicity of Wood Preservatives, by S. C. Reeve.
Paper on the Relation of Treating Variables to the Penetration and Absorption of Preservatives into Wood, by J. D. MacLean, engineer in forest products, Forest Products Laboratory, Madison, Wis.
Paper on the Checking of Hard Maple Ties, by J. F. Harkom, Forest Products Laboratories of Canada, Montreal, Que.

Wednesday—Users' Day

Report of Committee on the Treatment of Car Lumber, J. T. St. Clair, chairman, engineer of car construction, Atchison, Topeka & Santa Fe, Chicago.
Report of Committee on Tie Service Records, C. F. Ford, chairman, supervisor, tie and timber department, Chicago, Rock Island & Pacific, Chicago.
Address on The Economy of Framing Structural Timbers Before Treatment, by Earl Stimson, chief engineer maintenance, Baltimore & Ohio, Baltimore, Md.
Address on What the Lackawanna Has Gained from the Treatment of Ties, by G. J. Ray, chief engineer, Delaware, Lackawanna & Western, Hoboken, N. J.
Paper on Some Failures of Cross Ties, by Galen Wood, chemist engineer, Philadelphia, Pa.

Thursday Morning

Report of Committee on Plant Operation, Ed Kelly, chairman, assistant manager treating plant, Atchison, Topeka & Santa Fe, Topeka, Kan.
Report of Committee on Boiling Treatments, J. D. MacLean, chairman, engineer in forest products, Forest Products Laboratory, Madison, Wis.
Report of Service Bureau Board, A. R. Joyce, chairman, vice-president, Joyce-Watkins Company, Chicago.
Closing business.

Employee Stockholders, 800,000

The purchase by employees of shares of stock in the corporation in whose service they are engaged, is chiefly of value as a factor in promoting the habit of saving and thrift; that is to say, the influence of this practice on the employees' interest in the corporation's affairs, is a secondary matter. This is the conclusion of the National Industrial Conference Board (New York City), which has made an elaborate study of employees' stock purchase plans throughout the country. It is estimated that 800,000 employees now own over one billion dollars' worth of securities of the concerns by which they are employed. These employees also have, in the aggregate, many millions of dollars invested in companies other than those for which they work.

The Conference Board finds little evidence of employee stockownership being a potential factor in furthering the so-called

democratization of industry. Numerous concerns have found the sale of stock to employees a valuable means of raising capital economically. The risk that stock purchased by an employee may decline in value, which is recognized everywhere, has in some cases been partly neutralized by the establishment of plans provided for the purchase by employees of securities of various other companies as well as their own. Certain of these plans have grown to immense proportions. The 800,000 shareholders here referred to, constitute a little less than a third of the total number of persons employed by the 315 concerns reporting.

Supreme Court Interprets Liability Act

In an action for death under the Federal Employers' Liability Act, brought for the benefit of a sister as a dependent, it appeared that the deceased left no widow, child, or father, but that his mother survived him, dying before an administrator was appointed. The railroad claimed that, since the mother survived, the cause of action vested in her, and that it died on her death. The Supreme Court of the United States, reversing 159 Minn. 417; 166 Minn. 79, 83, sustains this contention. The question is a novel one and depends on the construction of section 1 of the act, which provides:

"Every common carrier by railroad * * * shall be liable in damages to any person; * * * or, in case of death of such employee, to his or her personal representative, for the benefit of the surviving widow or husband and children of such employee; and, if none, then of such employee's parents; and, if none, then of the next of kin dependent upon such employee."

The Supreme Court says, in substance, that the cause of action accrues at the death of the employee; and when it accrues there is an immediate, final and absolute vesting in that one of the several beneficiaries who, according to the express provision of the statute, is declared entitled to be compensated. "Upon the death of Anderson (the employee) an administrator might have been appointed and an action brought immediately. If it had been so brought, it would have been for the benefit solely of the mother; and no other action would have lain. The failure to bring the action in the mother's lifetime did not result in creating a new cause of action after her death for the benefit of the sister."—C. B. & Q. v. Wells-Dickey Trust Co. Decided November 21, 1927. Opinion by Mr. Justice Brandeis.

Compilation of Statutes and I. C. C. Decisions

The Interstate Commerce Commission, in its annual report to Congress, says that it was "obviously" not possible to comply within the time set with a resolution adopted by the Senate last January requesting a compilation of the various acts administered by the commission and related provisions of law annotated with digests of all pertinent decisions of the courts and

the commission and other administrative agencies, to be furnished by October 1 and to be printed as a public document.

"The resolution calls for a great amount of work," the commission says. "We doubt whether the result would warrant the labor and expense involved as to certain of the matters contemplated. Decisions of the state courts construing the federal statutes and decisions of administrative agencies other than this commission are of doubtful assistance, and might well be omitted. As it is not feasible to forecast the exact time of compliance with the request, the resolution might well be amended to provide that we shall comply with the request as soon as possible, rather than by any certain time limited.

"The following progress has been made:

"The statutes to be annotated have been selected; and the raw material has been collected, complete to date, from the decisions of the Supreme Court of the United States and the lower federal courts and this commission, but not from decisions of the state courts or other administrative agencies. The examination, verification, selection, and classification of the raw material by reference to appropriate statute sections, paragraphs, and subparagraphs, has been half completed. There remains to be done the compilation and condensation of this selected and classified material, the preparation of the annotation therefrom, editing and verification of copy, and the preparation of index.

"Some idea of the volumetric mass of the undertaking can be secured from the number of points of material which have been assembled. To date these exceed 120,000, and before the completion of the manuscript several thousand more will be added."

Superintendents' Association Selects Committees

The Executive and Advisory committee of the American Association of Railroad Superintendents has selected the following subjects for consideration by committees and report at the next convention, which will be held in Memphis, Tenn., on June 12-15:

The Operation of Trains by Automatic Signal Indication; Automatic Train Control; the Remote Control of Switches and Other Appliances Designed to Facilitate the Movement of Trains and Avoid Their Stopping—Committee on Transportation, H. F. Milligan (C. C. C. & St. L.), chairman.

Expediting the Movement of Cars in Interchange in Large Terminals—Committee on Interchange Car Inspection, A. G. Peck (M-K-T), chairman.

The Best Means of Operating Trains by Means of Mechanical Appliances—Committee on Train Rules, C. A. Mitchell (N. Y., N. H. & H.), chairman.

Public Relations Between Railroads and Shippers.—Increasing the Average Net Ton Per Car—Operating Committee No. 5, F. O. Coleman (M. & St. L.), chairman.

The Careful Handling of Freight in Terminals and on the Road—Operating

Committee No. 6, G. R. Carlton (S. A. L.), chairman.

The Best Method of Promoting Safety. Employees' Relations.—Operating Committee No. 7, F. O. Whiteman (East St. Louis & Suburban), chairman.

The Most Economical Train Load—Operating Committee No. 8, Victor Parvin (Ann Arbor), chairman.

Long Engine Runs—Operating Committee No. 9, P. F. McManus (E. J. & E.), chairman.

Hump Yard Versus Flat Yard Operation—Special committee, F. G. Swafford (I. H. B.), chairman.

The Motor Bus and Motor Truck as Auxiliary Agencies in Railway Transportation. The Motor Rail Car's Place in Main Line and Branch Line Service—Special Committee, M. F. Steinberger, special engineer, vice-president's office (B. & O.), Baltimore, Md., chairman.

Compares New England's Problems to Ford's

New England and its industries, alert to meet changing demands, were likened to Henry Ford and the conditions which have produced the new Ford car in an address by President George Hannauer of the Boston & Maine before the Traffic Club of Chicago on December 5.

"After years of dominance in many fields of industry and business," said Mr. Hannauer, "New England, I am told, became somewhat complacent and self-satisfied, allowing newer and more aggressive sections of the country to cut in on her extension of industries and markets. Consider the facts as to the Ford car, and I think the analogy will be clear. Henry Ford found the newer school of thought in the automobile industry developing color and style and more modern appliances to produce cars which encroached on his former market, and he proceeded to make over his product to meet the new competition. Result, the new Ford car.

"New England started doing this three years ago, I am told, and I know that nowadays any attitude of complacency has been set aside and through the New England Council a process of self-analysis and survey of market demands has developed a stimulus to new energy and growth. Result, New England business today is on an aggressive, forward-looking basis; its industries for the most part are alert to advance modern ideas, the pioneering instinct which gave New England dominance for years has been revived, and substantial commitments are being made in projects which involve high faith in New England's future.

"As an indication of that, I may point to the Boston & Maine's program. The rehabilitation of the railroad is in itself an indication of the new New England. With \$12,000,000 already spent in construction of new classification yards at Boston, Mechanicville, N. Y., and White River Junction, Vt., the enlargement of the Hoosac tunnel, the building of modern freight houses, improved team track layouts, rock-ballasting roadbed and other projects which make for faster and better handling of its freight business, the Boston

& Maine two weeks ago announced a project for a New North Station as its Boston passenger terminal, upon which work is now under way. This will involve an aggregate expenditure of many more millions."

Crossings Being Abolished in New York State

The New York State Public Service Commission, following numerous hearings held throughout the state during the past two months, announces that 174 projects, involving the proposed abolition of 203 highway grade crossings, will be made the subject of further hearings in the near future. These 203 crossings are those recommended by the State Department of Public Works as needing to be eliminated in the year 1928; and the total estimated cost will be \$30,867,700. The hearings heretofore held were to determine whether the commission agreed with the Department of Public Works; and final approval of each work, as being necessary in the interest of public safety, remains to be settled at the hearings yet to be held.

The present announcement contains a list showing the number of crossings in each county (51 counties, all outside of greater New York) with the estimated expenditure in each county. Those totaling more than \$1,000,000 are: Erie county, \$8,371,000; Monroe, \$1,070,000; Nassau, \$4,320,000; Westchester, \$1,000,000.

The gross total of this list includes \$8,077,000 for improvements which have been considered in the past, but of which the cities and towns could not afford to bear their share of the cost; but, by the expected new law, early in 1928, the county or the state may contribute to the cost, in place of the town.

The commission has left out of its plan a number of eliminations, recommended by the State Superintendent of Public Works, because it was believed that the work could not be accomplished without undue interference with railroad traffic.

The foregoing has to do with future activities. Plans already started also include a large amount of work. The above statement was followed, on December 5, by the announcement that the commission had ordered the elimination of 12 crossings in the city of Elmira, at an estimated cost of \$2,000,000; all crossings on the D. L. & W. in that city, except Thurston avenue; and the elimination has been ordered of 22 grade crossings in Binghamton, involving three railroads, the Erie, the D. L. & W., and the Delaware & Hudson.

On December 6, the commission announced the following elimination orders: New York Central, Canton, two crossings, \$175,000; Rotterdam, \$—; Rome, \$140,000; Yonkers, Odell avenue, \$150,000; Dunwoodie, \$—; Lewiston, \$180,000. At Blasdell, Erie county, Ridge road crossing of the New York Central and the Pennsylvania, \$200,000. On the New York Central, at Hastings-on-Hudson, \$183,000. Crossing of a street over the New York Central and the New York State Railways, Whitestown, \$230,000.

At Depew, crossing of the Lehigh Valley; New York Central; Delaware, Lackawanna & Western and Erie, \$800,000.

R. H. Aishton Addresses Washington Engineers

R. H. Aishton, president of the American Railway Association, addressing the Washington Society of Engineers on December 7, said that despite the possibilities of waterways, motor trucks and airplanes as means of transportation "the chief burden of transportation service in this country will continue to rest upon the railroads" and that "on their ability to provide adequate, efficient and economical transportation at all times very largely depends the future development of this country."

"As time goes on," Mr. Aishton said, "it is not beyond the bounds of possibility that all of these methods of transportation will be coordinated as to bring about the best results for the public interest. So long, therefore, as this is true—that, in the main, this country will depend on the railroads—and so long as our nation continues to expand in the tomorrows as it did in the yesterdays, there must necessarily be a continued policy of expansion by the railroads to meet, with efficiency, the increased demands of industry and trade for more and better transportation service. The railroads themselves are, and must continue to be, progressive and must proceed on sound and constructive lines not only to maintain the high standard of service which they have already achieved but also to render year by year better records of service."

"In all of this work, engineering will have an important and even essential part in its consummation, and engineering and scientific study will very largely point the way towards bringing about these results."

The Canadian Railways January to September

Although the freight traffic on the Maritime lines of the Canadian National increased by 12 per cent in the 9 months ended September 30, the freight revenue decreased by 8.9 per cent, the 20 per cent reduction under the Maritime Freight Rates Act, passed at the last session of the Canadian Parliament, being the principal factor, according to a summary of railway operations issued by the Bureau of Statistics at Ottawa. Under the law, accounts for the Maritime lines are now kept separately.

The report continues that passenger revenues increased slightly, but gross revenues decreased by \$100,869, or 5.3 per cent. Operating expenses were heavier by \$138,382 or 6.1 per cent and other expenses also correspondingly increased.

The report covers the financial returns of all Canadian railways. It shows that the revenue ton miles of all railways during the month of September was smaller this year than in 1922, 1923, 1925 and 1926, and that the actual decrease from last year was 22 per cent. The large grain crop, the report says, gave promise of a heavy freight traffic for September, but the late ripening and the wet weather delayed threshing so that instead of a heavy movement, traffic was unusually light.

The operating revenue of the Canadian lines of the C. N. R. for September, 1927,

totalled \$17,629,173, compared with \$18,088,221, for 1926; the operating expenses were \$13,888,031 in 1927, and \$13,927,048 in 1926. This year's net operating revenue, therefore, totalled \$3,741,142, compared with last year's total for September of \$4,116,172.

The figures for all lines owned by the Canadian National Railways, for September, 1927, were: Operating revenue, \$22,125,397; operating expense, \$17,103,870; net operating revenue, \$5,021,527.

With regard to the Canadian Pacific a decrease of 27.1 is shown in freight traffic in September last, as compared with the corresponding month of 1926. Practically all of this was in the grain movement of the western provinces. Freight revenues declined by \$1,561,353 or 11.7 per cent.; passenger revenues by \$269,125 or 8.2 per cent., and total gross revenues decreased by \$1,763,850.

For the nine months, gross revenues were greater than in 1926, by \$2,576,434, but heavier expenses reduced the net operating revenue by \$3,355,118, and the operating income by \$4,136,776.

For three months ended September 30, on the Maritime lines of the Canadian National, the operating revenues were \$5,842,800 and operating expenses \$7,727,336—deficit of \$1,884,536.

Railway Bills in Congress

Only a few bills of interest to railways were included in the 6,000 introduced in Congress on the first three days of the session which began on December 5, and practically all of these were bills that had been introduced at the last session. Chairman Parker of the House committee on interstate and foreign commerce reintroduced his railroad consolidation bill, on which further hearings are to be held, as H. R. 5641, and Representative Newton reintroduced as H. R. 5919 the National Industrial Traffic League bill to amend the rate-making section of the present law. Representative Britten also reintroduced his resolution to provide for the use of the metric system, H. J. Res. 10. Among the other bills of interest to the railways were the following:

H. R. 19. Representative Denison. To regulate interstate commerce by motor vehicles operating as common carriers on the public highways.

H. R. 96. Representative LaGuardia. To prohibit the transportation, sale, and reception of stolen property in interstate and foreign commerce.

H. R. 162. Representative Hudson. To amend the act to regulate commerce.

H. R. 176. Representative Kindred. To provide for handling and rate of pay for storage of closed-pouchmail.

H. R. 5466. Representative McAndrew. To provide for the carrying of officers and enlisted men of the military and naval services while on leave of absence or furlough at own expense, at reduced rates.

H. R. 5613. Representative Mapes. To provide for a deep waterway for ocean-going vessels by way of the St. Lawrence river and Welland canal.

H. R. 5640. Representative Parker. To regulate interstate commerce by motor vehicles operating as common carriers on the public highways.

H. R. 5716. Representative Vinson. To decrease rates, fares and charges of railroads and carriers subject to the act to regulate commerce.

H. J. Res. 10. Representative Britten. Relating to the establishment of commodity quantity units (metric system) in merchandising after 1935.

H. Res. 18. Representative Celler. Providing for an investigation of labor conditions affecting employees rendering domestic service on railroads.

Railway Revenues and Expenses for October

Class I railroads in October had a net railway operating income of \$133,776,139, at the annual rate of 4.86 per cent on their property investment, according to reports compiled in the Bureau of Railway Economics. In October, 1926, the net was \$146,357,977, or 5.45 per cent.

Operating revenues for October were \$580,498,070, a decrease of 4.9 per cent. Operating expenses totaled \$399,503,657, a decrease of 3.9 per cent. Taxes were \$36,534,843. This brought the total tax bill for the first ten months in 1927 to \$324,909,415, a decrease of \$4,927,047 or 1.5 per cent below that of the corresponding period in 1926.

Fourteen Class I railroads operated at a loss in October, of which eight were in the Eastern district, one in the Southern and five in the Western.

For the first ten months the net railway operating income was \$942,102,322 at the rate of 4.64 per cent, as compared with \$1,037,931,888, or 5.25 per cent in the corresponding period of last year.

Operating revenues for the ten months amounted to \$5,235,606,987, a decrease of 2.6 per cent. Operating expenses totaled \$3,872,445,023, a decrease of 1.1 per cent.

Net railway operating income by districts for the first ten months, with the percentage of return based on property investment on an annual basis, was as follows:

New England Region.....	\$37,444,970	4.87%
Great Lakes Region.....	165,715,339	4.75%
Central Eastern Region.....	206,968,022	4.86%
Poconong Region	71,678,442	8.40%
Total Eastern District....	481,806,773	5.14%
Total Southern District....	118,252,460	4.71%
Northwestern Region	100,629,681	3.64%
Central Western Region....	166,566,095	4.34%
Southwestern Region	74,847,313	4.16%
Total Western District....	342,043,089	4.07%
United States	942,102,322	4.64%

The rate of return on property investment for the five years period ending with September, 1927, has averaged 4.68 per cent.

Class I railroads in the Eastern district for the ten months had a net of \$481,806,773, at the rate of 5.14 per cent. For the same period in 1926, their net railway operating income was \$523,789,818 or 5.74 per cent. For October they had a net of \$54,789,869, compared with \$67,231,026 in October, 1926.

Class I railroads in the Southern district for the ten months had a net of \$118,252,460, at the rate of 4.71 per cent. For the same period in 1926, their net amounted to \$136,940,917, at the rate of 5.75 per cent.

The net in October amounted to \$13,889,373, while in the same month in 1926 it was \$15,844,786.

Class I railroads in the Western district for the ten months had a net of \$342,043,089, at the rate of 4.07 per cent. For the ten months in 1926, they had a net of \$377,201,153, which was at the rate of 4.56 per cent. For October, the net in the Western district amounted to \$65,096,897. The net in October, 1926, totaled \$63,282,165.

Class I Railroads—United States

	Month of October	
	1927	1926
Total operating revenues	\$580,498,070	\$610,384,849
Total operating expenses	399,503,657	415,892,153
Taxes	36,534,843	37,439,037
Net railway operating income	133,776,139	146,357,977
Operating ratio—per cent	68.82	68.14
Rate of return on property investment	4.86%	5.45%
Ten months ended October 31st		
Total operating revenues	\$5,235,606,987	\$5,375,345,925
Total operating expenses	3,872,445,023	3,916,121,115
Taxes	324,909,415	329,836,462
Net railway operating income	942,102,322	1,037,931,888
Operating ratio—per cent	73.96	72.85
Rate of return on property investment	4.64%	5.25%

The Harriman Medals for 1926

The E. H. Harriman Gold Medal for the most conspicuous accident prevention work on an American railroad during the year ending December 31, 1926 has been awarded by the American Museum of Safety to the Norfolk & Western, in Group A (roads, operating 10 million or more locomotive miles).

The first prize for Group B railroads (one million to 10 million locomotive miles), which is a silver replica of the gold medal, was awarded to the Duluth, Missabe & Northern (the second consecutive year in which this railroad has won this medal). During 1925 and 1926 combined, not a person was killed, and only three passengers were injured.

The first prize for Group C railroads (less than one million), which is a bronze replica of the gold medal, was awarded to the Quincy, Omaha & Kansas City; 432,000 locomotive miles, 628,000 man-hours, exclusive of train and engine service, and total passenger mileage 4,994,000. During the year, no passengers were killed or injured in any kind of accident. No one was killed at a highway grade crossing or elsewhere, and only one person was injured, a farmer driving a team across a grade crossing. This railroad is 249 miles long.

In addition to the three prizes the committee voted to issue a special certificate of merit to the Union Pacific in "special acknowledgement to the Union Pacific Railroad and its organization for their great accomplishment in the safety field." For two consecutive years, 1924 and 1925, the gold medal was awarded to the Union Pacific System. For 1926, the awards were

made to individual lines, instead of to railroad systems, as formerly.

The Committee of Award consists of: John J. Esch, chairman, Interstate Commerce Commission; R. H. Aishton, president, American Railway Association; Samuel O. Dunn, editor, *Railway Age*; Julius H. Parmelee, director Bureau of Railway Economics; F. D. Underwood, retired president of the Erie, advisor to the committee on behalf of Mrs. E. H. Harriman, and Arthur Williams, vice president, the New York Edison Company, and president of the American Museum of Safety, chairman of the committee. The bases of awards were somewhat modified for 1926. Passenger casualties in train accidents were rated per hundred million passenger miles, instead of per million passenger locomotive miles; casualties to "all other persons" were rated per 500,000 locomotive miles, instead of per million locomotive miles, and suicidal or attempted suicidal casualties were excluded entirely.

The Norfolk & Western in 1926 showed a reduction of more than 28 per cent in passenger fatalities. An analysis of the records indicates that safety accomplishment on our railways is neither accidental nor fortuitous. The railways that appear at or near the top of the several groups are there because they have earned the right to be there. Practically all the leading roads for 1926 show improvement over their records for 1925.

Appropriations Recommended for I.C.C. and Board of Mediation

Appropriations for the Interstate Commerce Commission amounting to \$7,642,337 for the fiscal year ending June 30, 1929, are included in the budget estimates sent to Congress on December, with the annual budget message of the President. This compares with a total of \$7,981,000 appropriated for 1928, including a supplemental estimate of \$170,000, but there is a reduction of \$363,214 to \$2,200,000 for valuation work, due to the expected practical completion of the primary valuations in the fiscal year 1928, while an increase is proposed for the general work of the commission. For this the estimate is \$2,564,500 for 1929, as compared with \$2,460,600 for 1928, to cover additional attorney examiners, cost of reporting and travel expenses. For the investigation of accounts of carriers, which the commission in its annual reports has said it has been obliged to curtail in recent years for lack of adequate appropriations, the estimate provides for an increase from \$1,315,000 to \$1,327,745, to provide for additional travel expenses. A decrease of \$75,000 is proposed in the allowance for printing and binding "due to the fact that provision is being made in the fiscal year 1928 to print accumulated volumes of valuation reports."

For the United States Board of Mediation the estimate for 1929 is \$347,902, as compared with \$390,000 for 1928. This involves a reduction from \$177,000 to \$155,102 for salaries and expenses, from \$100,000 to \$80,000 for expenses of arbitration boards, and from \$3,000 to \$2,800 for printing and binding.

Traffic

The Port of New York authority is to build a central ("inland") freight house in Manhattan, and invites any one who is able and competent to undertake the task to offer proposals for operating the establishment. The site for the proposed terminal has not as yet been decided upon. The facilities of the station will be open to all shippers, all railroads and all truckmen.

The Atchison, Topeka & Santa Fe, in conjunction with the Western Pacific, the Denver & Rio Grande Western and the Chicago, Burlington & Quincy will conduct three 22-day personally conducted tours to California; one leaving Chicago on January 14, one on February 11, and one on March 10, all returning via Salt Lake City, and Denver. The scheme is designed to test out the feasibility of establishing such tours permanently. The cost of the 6,000-miles tour is \$448.81 per person, including fare, hotels, motor trips, and sight-seeing features. The main points visited are Indian Detour, New Mexico; Grand Canyon, Arizona; Phoenix; Los Angeles, Calif.; San Diego; Yosemite National Park and San Francisco on the Santa Fe, Feather River Canyon and Salt Lake City on the Western Pacific; the Royal Gorge on the Denver & Rio Grande Western and Omaha on the Chicago, Burlington & Quincy.

Motor Transport Investigation Set for Argument

The Interstate Commerce Commission announced on December 5 that its investigation of motor bus and motor truck operation has been assigned for oral argument on January 16, before the commission. The commission at one time had indicated its intention of sending a report of its investigation, with recommendations for legislation, to Congress at the opening of the new session, but it has now decided first to issue a proposed report by an examiner, to be served on the parties to the investigation, and it is expected that this will be made public by December 15 or shortly thereafter.

Supreme Court Settles Florida Oil Rates

The Supreme Court of the United States has affirmed the decree of the federal district court for western Kentucky, 13 Fed. (2nd) 633, holding that all the transportation of oil by the Atlantic Coast Line for the Standard Oil Company of Kentucky, after the oil reaches the storage tanks or tank cars in Tampa, Port Tampa or Jacksonville, to subordinate centres of the oil company, such as bulk stations and service stations, in Florida, is intrastate commerce, and that the oil company is entitled to intrastate rates thereon. These rates apply alike to gasoline, refined oil, lubricating oil and fuel oil. The decree of the Circuit

Court of Appeals for the Seventh Circuit, 16 Fed. (2nd) 441, modifying the district court's decree so far as regards fuel oil landed at Port Tampa, which it held was an interstate shipment from its point of origin, Tampico, to its ultimate destination in Florida where it is used, is to that extent reversed.—A. C. L. v. Standard Oil Co. of Ky. Decided November 28, 1927. Opinion by Mr. Chief Justice Taft.

Revised Southern Class Rates Filed

Tariff schedules have been filed with the Interstate Commerce Commission by the railroads putting into effect a comprehensive revision of the interstate freight rates within southern territory and between southern territory and official territory, in accordance with an elaborate series of rate scales, based on mileage, prescribed by the commission in its report in Southern Class Rate Investigation, No. 13,494. The commission did not order its proposed bases of rates put into effect; but, after the issuance of its original order, considered various petitions filed by railroads and shippers as a result of which it later issued various supplemental reports modifying the original findings. Recently the commission issued an order directing the railroads to put into effect the prescribed scales of rates to and from points in the peninsula of Florida and tariffs prepared to comply with the other findings of the report were filed voluntarily by the roads effective January 15. The rates include both reductions and increases, as the commission's announced purpose was to bring about a more harmonious and simple rate structure rather than to change the general level of the rates.

Short Line Allowed Increased Division on Silk

The Interstate Commerce Commission in a recent decision held that the Hoboken Manufacturers' Railroad, a one-mile switching and terminal railroad at Hoboken, N. J., is entitled to a division of 22 cents out of the transcontinental joint rate of \$9 per 100 pounds, on shipments of silk from California, in place of its present division of 5.25 cents which is the same as it receives ordinarily on l. c. l. freight. The company had asked a division of 25 cents, on the ground of the unusual expenses incurred in handling silk shipments, which constitute its principal traffic, because on account of the high value of the commodity it employs armed guards and special employees to unload it. The defendant railroads, in contesting the increase in division, pointed to their own high expenses in handling silk and said that the switching line handled the silk for a distance of only about two city blocks. The \$9 transcontinental rate has been divided 27.5 per cent to the lines east of Chicago, or approximately 185 per cent of their first class rates. The silk is delivered to the Hoboken line by the Erie. The commission denied a request of the lines west of Chicago that no part of any increase should be apportioned to them, but did not decide where the shrinkage should be made.

Equipment and Supplies

Locomotives

THE BOSTON & MAINE has renewed its inquiry for locomotives and is now inquiring for 30, 2-8-4 type locomotives.

THE SOUTHERN is inquiring for 25 Mikado type locomotives, 8 Mallet type locomotives and 5 Pacific type locomotives.

THE JAPANESE GOVERNMENT RAILWAYS have ordered a 1200 h.p. Diesel locomotive, direct drive, from the Friedrich Krupp A. G., Germany.

Freight Cars

THE BANGOR & AROOSTOOK is inquiring for 100 box cars.

THE LEHIGH & NEW ENGLAND is inquiring for 6 caboose cars.

THE ATLANTIC COAST LINE is inquiring for about 75 underframes for box cars.

THE TEXAS & PACIFIC is inquiring for 500 drop bottom gondola cars, 300 flat cars of 50 tons' capacity, and 200 automobile cars.

THE KANAWHA GLEN JEAN & EASTERN has ordered two flat cars, 40-ft. long and of 50 tons' capacity, from the American Car & Foundry Company.

THE FRUIT GROWERS EXPRESS, in addition to the orders for underframes reported in the *Railway Age* of December 3, has ordered 60 from the Petroleum Iron Works.

THE SOUTHERN is inquiring for 1,000 steel coal cars of 55 tons' capacity, 1,000 steel frame, automobile box cars of 40 tons' capacity, 250 ballast cars of 50 tons' capacity, 200 caboose cars, 50 air dump cars and 500 underframes for 50 ton low side gondola cars.

THE CHICAGO & NORTH WESTERN, in addition to recent orders for freight cars reported in the *Railway Age* of December 3, has ordered 100 gondola cars from the American Car & Foundry Company, and 100 underframes for caboose cars from the Illinois Car & Manufacturing Company.

THE LOUISVILLE & NASHVILLE, reported in the *Railway Age* of November 26 as expecting to be in the market shortly for freight cars, is now inquiring for 1,250 drop bottom gondola cars, 200 low side gondola cars, 200 automobile cars and 300 single sheathed box cars, all to be of 50 tons' capacity, and for 200 steel under frame stock cars of 40 tons' capacity.

Passenger Cars

THE TEXAS & PACIFIC, reported in the *Railway Age* of November 26 as contemplating the purchase of passenger cars in

the near future, is now inquiring for 3 dining cars and 5 combination baggage and express cars.

THE SOUTHERN is inquiring for 23 combination mail and baggage cars and 2 full postal cars. Bids are also wanted for 55 underframes for use in building passenger train cars.

THE LOUISVILLE & NASHVILLE, reported in the *Railway Age* of November 26 as soon coming in the market for passenger equipment, is now inquiring for 6 combination baggage and passenger cars, 8 coaches and 2 baggage cars.

THE CHICAGO, BURLINGTON & QUINCY, which ordered 25 gas-electric rail cars from the Pullman Car and Manufacturing Corp., as mentioned in the *Railway Age* of December 3, has specified that these cars be equipped with power plants supplied by the Electro-Motive Company, Cleveland, Ohio. Twenty-one of the cars will have single unit power plants of 275 rated hp. each, and 4 cars will have single unit power plants of 400 total rated hp. each.

THE CHICAGO & NORTH WESTERN, which ordered 11 gas-electric rail cars from the Pullman Car & Manufacturing Corp., as noted in the December 3 and previous issues of the *Railway Age*, will equip these cars with power plants as follows: 3 cars will have single unit power plants of 220 rated hp. each; 3 cars will have single unit power plants of 275 rated hp. each; 5 cars will have dual power plants of 550 total rated hp. each; all power plants for this equipment being furnished by the Electro-Motive Company, Cleveland, Ohio.

Iron and Steel

THE GRAND TRUNK WESTERN is reported to have ordered 10,000 tons of steel rail.

THE CHICAGO MILWAUKEE & ST. PAUL has ordered 40,000 tons of rails from the Illinois Steel Company and 10,000 tons from the Inland Steel Company.

THE MISSOURI PACIFIC is reported to have ordered 40,000 tons of rail from the Inland Steel Company, the United States Steel Corporation and the Colorado Fuel & Iron Company.

THE SOUTHERN PACIFIC has ordered 17,640 tons of rail from the Colorado Fuel & Iron Company; 30,910 tons from the Tennessee Coal, Iron & Railroad Company, and 22,025 tons from the Bethlehem Steel Company. The Southern Pacific is reported to have ordered 24,292 additional tons of rail, making the total 94,867.

THE NEW YORK CENTRAL has ordered from the Dominion Iron & Steel Company, Sydney, N. S., 11,600 tons of 127-lb. open hearth Dudley section New York Central standard rail, for delivery in Canada to the Canadian lines of the Michigan Central. The cost of the contract is about \$500,000 and deliveries are to begin in January next and be completed within three months.

Supply Trade

Charles L. Butler, representative of the Detroit Lubricator Company, has resigned to become manager of railroad sales for the Goodall Rubber Company, with headquarters at 117 North Wacker Drive, Chicago.

The Harrington Company, Philadelphia, Pa., has sold its machine tool business, together with drawings, patterns, jigs, tools and fixtures, patents and goodwill to the Consolidated Machine Tool Corporation of America, Rochester, N. Y.

The Cohoes Rolling Mill Company, Cohoes, N. Y., has created a special railroad sales department and P. C. Doerr, who has been connected with the company for the past two years, after January 1 will devote all of his time to railroad sales.

The Pilliod Company, with offices at New York City and Chicago, manufacturers of the Baker, Southern and Young valve gears, have acquired the exclusive sales and service of the locomotive cut-off control manufactured by the Transportation Devices Corporation, Indianapolis, Ind.

The Ohio Brass Company, Mansfield, Ohio, will create an executive branch in New York January 1 to cover New England and the territories served by its New York and Philadelphia sales offices, and thereby improve its service in that part of the country. Frederick Attwood, who will be in charge, directed the interests of the Ohio Brass Company in Europe for several years, and has returned to this country to undertake the organization and direction of the New York executive office.

Joseph T. Ryerson & Son, Inc., Chicago, has taken over the exclusive sale of the Glasgow iron billets to the railroads of the country. Glasgow iron is a pure puddled doubly refined rolled wrought iron, made by the Glasgow Iron Company, Pottstown, Pa. This firm, organized in 1876, are manufacturers of iron plates, bars, billets and boiler specialties. For many years they have been specializing in the manufacture of

refined iron. The Ryerson Company organization also handles the sale of the Lewis special staybolt and engine bolt iron product of the Penn Iron & Steel Co., Creighton, Pa.

L. M. Ritchie, who has been appointed district manager, railway sales, of the E. I. du Pont de Nemours & Company, Inc., with headquarters at Chicago, was born on March 20, 1892, at Bernise, Pa., and graduated from Allegheny College in 1916 and received his master's degree in 1917 at the above college in chemistry. He then served as a member of the staff of the U. S.



L. M. Ritchie

Bureau of Standards at Washington, D. C., as assistant chemist in the Electro Chemistry section of the Electrical division and in 1919 was appointed associate chemist and assistant chief of this section. In 1922 he resigned and was appointed district sales engineer of the National Carbon Company, Inc., and the Prest-O-Lite Company, with headquarters at Cleveland, Ohio, which position he held until his recent appointment.

November Locomotive Shipments

November shipments of railroad locomotives, from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 52 locomotives, as compared with 112 in October and 128 in November, 1926. The following table gives the shipments and unfilled orders with comparisons:

Year and month	Shipments					Unfilled orders, end of month				
	Domestic		Foreign		Total	Domestic		Foreign		Total
	Total	Steam	Electric	Steam		Steam	Electric	Steam	Electric	
November 1926	128	109	15	3	1	517	391	27	84	15
Total (11 mos.)	1,570	1,200	160	162	48	..	..	..	..	..
December	185	152	17	5	11	398	297	14	79	8
Total (year)	1,755	1,352	177	167	59	..	..	..	..	..
1927										
October	*112	81	*12	10	9	*182	97	*45	32	8
November	52	31	7	8	6	145	74	42	25	4
Total (11 mos.)	1,082	685	135	154	28	..	..	..	..	..

*Revised.

The Hyman-Michaels Company, Chicago, has been appointed sales agent for the mid-west territory of the Ohio Locomotive Train Company and its subsidiary, the Toledo Crane Company.

A. W. Armstrong, president of the Ayer & Lord Tie Company, Chicago, has been appointed a member of the National Committee on Wood Utilization of the Department of Commerce by Secretary Hoover, its chairman, and has been assigned to the Wood Preservation group of the committee. The national body is sponsoring a project of retail distribution of preserved wood in the St. Louis area, and Mr. Armstrong, because of his wide experience in the use of wood preservatives, is aiding in this work. This distribution of preserved wood project shortly will be extended to other parts of the country, it is announced.

A controlling interest in the National Steel Car Corporation, Hamilton, Ontario, has been purchased by Green-shields & Co., and McDougall & Cowans, of Montreal, Quebec. This stock amounting to 81,000 shares, out of a total of 100,000 outstanding, was subscribed originally in New York at the time the company was re-organized in 1920. The management of the company was taken over at the time of re-organization by Robert J. Magor, of Montreal, who is also engaged in the railway equipment business in the United States. It is understood that of the 81,000 shares, 20,000 will be taken by the management and associates and the balance will soon be offered for sale by the above mentioned banking houses which have under-written the shares.

Obituary

Ira C. Van Noy, who founded the Van Noy Interstate Company, now the Interstate Company, in 1889, and retired as president in 1924, died at San Francisco, Cal., on December 4.

V. K. Spicer, special representative of the Union Switch and Signal Company with headquarters at Chicago, died on December 5. Mr. Spicer was graduated from Massachusetts Institute of Technology in 1879 and entered the employ of the Union Electric Signal Company of Boston, remaining there until the organization of the Union Switch & Signal Company, in 1881. In the latter year he went to Pittsburgh as one of the engineers of that company, devoting his time during the following eight years to signal work in the field and in the shop. He was identified with the designing of the Union Switch & Signal Company's signaling apparatus, and the inventor of the Style B signal. In 1889, he was transferred to Chicago as signal engineer and superintendent, and in 1905 he was appointed western manager of the company. In 1915 he was appointed special representative which position he held until his death.

Construction

ATCHISON, TOPEKA & SANTA FE.—Ponca City, Okla., will vote on December 13 on the issuance of \$65,000 of bonds as the city's share of the cost of construction of a reinforced concrete subway under the tracks of this company at South avenue.

BALTIMORE & OHIO.—A contract has been let to the Vang Construction Company of Cumberland, Md., for bridge and grading work at Woodsdale, O., at a cost of \$175,000.

BOSTON & ALBANY.—The New England Construction Company of Springfield, Mass., has been awarded a contract for bridge repairs at Chester and Bucket, Mass. This is repair work growing out of the recent flood damage.

BUREAU OF RECLAMATION.—A contract for the construction of a railway, 22 miles long to the Owyhee river reclamation project in the vicinity of Vale, Ore., has been awarded to the General Construction Company, Seattle, Wash., at a cost of \$345,300.

CHICAGO & NORTH WESTERN.—Company forces have undertaken the depression and rearrangement of tracks in North Water street, Chicago, to provide proper clearances in connection with the construction of a bridge by the city over the Chicago river at LaSalle street. The cost of this work is expected to approximate \$60,000.

CHICAGO, MILWAUKEE & ST. PAUL.—The federal court at Chicago has authorized this company to expend \$28,580 for the construction of a water treating plant at South Minneapolis, Minn., which will have a capacity of 40,000 gal. per hour. Authorization has also been given for the reconstruction of a snowshed 845 ft. long, 1 mile west of Rockdale, Wash., at a cost of about \$34,800, and the construction of a three-span steel girder bridge at Marquette, Iowa, at a cost of \$26,600, to replace a pile trestle.

CHICAGO, MILWAUKEE & ST. PAUL.—Plans of this company for the separation of railroad and street grades at Milwaukee, Wis., for which the first contract was let in July for the construction of two highway subways, include the depression of four main tracks for a distance of 9,500 feet and the elevation of four main tracks for a distance of 2,000 feet, the relocation of a team yard and freight station to serve the North Avenue district and the construction of a classification and storage yard to replace facilities which must be abandoned because of the grade separation. Six bridges will be constructed to carry streets over the track depression. The total expenditure required for this project is estimated to be about \$3,500,000.

NEW YORK, CHICAGO & ST. LOUIS.—A contract for the construction of a concrete retaining wall at Broadway avenue, Cleveland, Ohio, which will have a length of about 1,790 ft., has been let to the In-

dustrial Construction Company, Cleveland, at a cost of about \$100,000. Construction of a retaining wall near the property of the Standard Oil Company at Cleveland will be undertaken by H. E. Culbertson, Cleveland, to whom the contract has been let at a cost of about \$400,000.

CHICAGO, ROCK ISLAND & PACIFIC.—Citizens of Oklahoma City, Okla., by a majority of 8 to 1 voted approval on November 29 of a \$4,000,000 bond issue which is to be used in acquiring the present right of way and passenger station site of the Rock Island in that city. Subject to the approval of the Interstate Commerce Commission the Rock Island will join with the St. Louis-San Francisco in the construction of a new passenger station in Oklahoma City.

DETROIT, TOLEDO & IRONTON.—A contract for the excavation of more than 200,000 cu. yd. of material for the new line of this company between Malinta, Ohio, and the Maumee river, 5½ miles, has been let to Roberts Brothers, Chicago, at a cost of about \$100,000.

GREAT NORTHERN.—A contract for the relocation of about 5,000 ft. of line along the Kootenai river east of Bonner's Ferry, Idaho, has been awarded to Morrison and Knudsen, Spokane, Wash., at a cost of about \$500,000. This project involves the construction of a 900-ft. concrete lined tunnel.

LOUISVILLE & NASHVILLE.—A contract for the construction of a line between Chevrolet, Ky., and Hagans, Va., 13 miles, has been awarded to W. W. Boxley & Co., Roanoke, Va., at a cost of about \$2,500,000. The total cost of the extension is estimated at more than \$5,000,000.

ST. LOUIS-SAN FRANCISCO, MUSCLE SHALS, BIRMINGHAM & PENSACOLA.—A contract for the construction of frame passenger and freight stations and miscellaneous buildings along the line now under construction between Aliceville, Ala., and Kimbrough has been let to the C. G. Kershaw Contracting Company, Birmingham, Ala., at a cost of approximately \$90,000.

TEXAS-NEW MEXICO.—The office of the attorney general of Texas has approved the issuance of a charter to this company for the construction of a railroad from a point near Monahans, Tex., on the Texas & Pacific to a point along the Texas-New Mexico boundary north of Kermit, Tex., to reach hitherto undeveloped oil fields. The length of the line will be about 35 miles.

TEXAS & PACIFIC.—A contract has been awarded to the Mississippi Valley Bridge & Iron Co., Leavenworth, Kan., for the construction of a bridge over the Atchafalaya river near Melville, La., to consist of five fixed spans and one vertical lift span.

WABASH.—This company plans the construction of a passenger station on Delmar Boulevard, St. Louis, Mo., in conjunction with a viaduct now under construction at that point. The cost of the station is estimated at \$300,000.

Financial

ATCHISON, TOPEKA & SANTA FE.—Trackage Rights and Abandonment.—The Interstate Commerce Commission has issued a certificate authorizing this company to operate under trackage rights over the Denver & Rio Grande Western between Pueblo, Col., and Portland, 26.12 miles, and permitting the abandonment of operations of the Santa Fe's own line between these points, which line was badly damaged by flood in June, 1921, and has not been restored.

To Sell Stock.—Directors have voted to issue \$9,296,400 common stock, par value \$100, to be offered to the stockholders at par on the basis of 4 per cent of their holdings as of January 27, 1928. The proceeds will be applied towards the payment of \$10,019,000 underlying bonds of the company maturing in 1928, including \$9,603,000 Eastern Oklahoma first mortgage 4 per cent bonds due March 1, 1928, \$224,000 Prescott & Eastern first mortgage 5 per cent bonds due April 1, 1928, and \$192,000 Hutchinson & Southern first mortgage 5 per cent bonds due January 1, 1928. A statement by President W. B. Storey said:

"The directors reached the decision to do this financing at this time because they feel that the Atchison can well afford to do it now, and they chose to issue stock because they believe that is the saner method of railroad financing at this time. In regard to the Interstate Commerce Commission's opinion of this move, the fact that the Atchison has such a large surplus might possibly exert a forestalling influence on the commission's approval. But we believe the fact that the financing is changing bonded indebtedness to stock indebtedness will serve to cause the commission to look favorably on the plan."

On the basis of the closing price of common stock on Tuesday of the present week, the day on which the new financing was announced, \$194.50, the rights to subscribe to the new stock are estimated to have a value of about \$3.64 per share.

BALTIMORE, CHESAPEAKE & ATLANTIC.—Foreclosure Proceedings Asked.—A bill of complaint has been filed in the United States District Court of Maryland by Chatham Phenix National Bank and Trust Company of New York, trustee under the first mortgage, requesting foreclosure proceedings under the mortgage, and sale of the entire property. The company had a deficit in 1925 and 1926 and its profit and loss deficit on December 31, 1926, amounted to twice the par value of the issue of first mortgage bonds. The company has been unable to pay interest on its bonds for the period March 1, 1922, to September 1, 1927. The Pennsylvania is the chief stockholder but has never received any return on the common stock. For several interest periods the Pennsylvania has purchased the coupons of the bonds.

CANADIAN PACIFIC.—Segregation Rumors Denied.—President E. W. Beatty has

made the following statement denying that the board of directors were considering the segregation of the company's extraneous assets:

"All reports that the company is considering the segregation of its extraneous assets are entirely without foundation. Several years ago consideration was given to the possibility of such action, but the balance of interest and convenience was thought to be opposed to it. The matter has not been reviewed recently and if all the company's outside holdings are maintained and operated for the sole benefit of its share and security holders, the advantage of administering them under a separate organization is at least doubtful.

"One of the unique features of the company's enterprise has been the varied character of its activities, all of which have helped to support the major portion of its undertakings in the railway proper—and have been a source of strength for many years.

"So far as the appreciation in the value of the company's stock in recent months has been due to a greater confidence in Canada's future, and in consequence, in the future of Canadian enterprises generally, it is very gratifying, but the current rumors as to the separation of its outside activities are, as I have stated, unfounded, as no such plan has, in recent years, been considered by our directorate."

The denial that segregation plans were in formulation followed a sudden rise in the price of Canadian Pacific to a new high price for 1927 of \$219 per share.

CENTRAL OF NEW JERSEY.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$5,000,000 of general mortgage 4 per cent bonds, to be sold at 96½, to provide funds to redeem on January 1 the first mortgage bonds of the American Dock & Improvement Company.

CHICAGO & NORTH WESTERN.—Equipment Trust.—The Interstate Commerce Commission has authorized an issue of \$2,610,000 of equipment trust certificates to be sold at not less than 101.32 and interest.

CHICAGO, ROCK ISLAND & PACIFIC.—Bonds.—This company has applied to the Interstate Commerce Commission for authority for an issue of \$1,000,000 of general mortgage 4 per cent bonds and a like amount of first and refunding mortgage bonds, to be issued against the general mortgage bonds.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—Equipment Trust Authorized.—The Interstate Commerce Commission has authorized the issuance of \$830,000 4½ per cent equipment trust of 1917 certificates, series D, 1927, to be sold to Halsey, Stuart & Co., the highest of 20 bidders, at 101.52, giving an average annual cost to the carrier of approximately 4.43 per cent. The equipment includes 500 50-ton steel underframe box cars having a total approximate cost of \$1,115,000.

LEHIGH VALLEY. No extra dividend. Decline of earnings, due largely to the lessened movement of anthracite coal, was given as the reason for failure of the directors, meeting at Philadelphia on December 7, to declare an extra dividend of 3 per cent or \$1.50 per share on the common stock such as was declared at this time last year. The regular quarterly dividends of 87½ cents per share on the common stock and \$1.25 per share on the preferred were declared, payable January 3 to stockholders of record on December 17.

LOS ANGELES & SALT LAKE.—Abandonment of Branch.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a part of its Glendale branch in Los Angeles County, Cal., 0.815 miles.

LOUISIANA & ARKANSAS.—Change of Control.—This company was sold to H. C. Couch, Pine Bluff, Ark., on November 26. Control of the road, which operates between Hope, Ark., and Alexandria, La., a distance of 300 miles, will be taken over on or before January 15.

LOUISVILLE & NASHVILLE.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to procure the authentication and delivery of \$49,503,000 of first and refunding mortgage bonds, to reimburse the treasury for past expenditures. The application says that the commission's examination of the thousands of pages of data regarding the expenditures will necessarily require considerable time and that it desires to be in a position where early action may be expected on future applications for authority for an actual issue of bonds to take advantage of favorable markets.

MINNESOTA WESTERN.—Control Purchased.—Harry E. Pence, president of the Minneapolis, Northfield & Southern, secured control of this company and its affiliated company, the Electric Short Line Terminal Company, on November 30 through the purchase of the interest of W. L. Luce. The Minneapolis, Northfield & Southern operates from Minneapolis, Minn., to Mankato, 103 miles, branches from Northfield to Randolph, 9 miles and branch from Masonic Home to Nicollet, 8 miles. The Minnesota Western operates 85 miles between Minneapolis and Lake Lillian.

MISSOURI-KANSAS-TEXAS.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$13,600,000 of prior lien mortgage 4½ per cent bonds, to provide funds for the retirement of \$12,894,577 of prior lien 6 per cent bonds, to be sold at Kuhn, Loeb & Co., and Ladenburg, Thalmann & Co., at 97¼ and interest.

MISSOURI-KANSAS-TEXAS.—Bonds Sold.—Kuhn, Loeb & Co., Ladenburg, Thalmann & Co., the National City Company, J. & W. Seligman & Co. and Hallgarten & Co. have offered \$13,600,000 4½ per cent prior lien mortgage bonds, series D, due January 1, 1928, at 99¾ and interest. Details of the issue are given in part as follows:

The proceeds of the sale of these bonds are to be applied towards the redemption on February 1, 1928, at 102½ per cent and accrued interest, of \$12,894,577 principal amount of prior lien mortgage 6 per cent gold bonds, series "C," due January 1, 1932, now outstanding in the hands of the public.

The prior lien bonds are secured by either a direct or collateral lien on 3,044.67 miles of railroad and appurtenances, comprising all the lines of the company, as follows: they are secured by a first lien, either directly or through the pledge of entire issues of first mortgage bonds and of all outstanding stocks (except directors' qualifying shares) of controlled companies, on 1,226.84 miles of first main tracks and all appurtenances thereto including terminal properties, yards, bridges and depots, owned at the time of the execution of the prior lien mortgage and thereafter acquired or to be acquired; a first lien on all shop facilities then owned by the company or thereafter acquired or to be acquired; and a first

lien on equipment having a depreciated book value on October 31, 1927, of approximately \$26,269,000; and, either directly or through the pledge of first mortgage bonds and all outstanding stocks (except directors' qualifying shares) of controlled companies, by a lien on all the remaining properties of the company and of its controlled companies owned at the time of the execution of the prior lien mortgage and thereafter acquired or to be acquired, subject only to outstanding obligations now amounting to \$32,048,800, for the refunding, payment or acquisition of which prior lien bonds have been reserved.

NEW YORK, NEW HAVEN & HARTFORD.—*Equipment Trusts Authorized.*—The Interstate Commerce Commission has authorized the issuance of \$4,500,000 4½ per cent equipment trust certificates, series of 1927, No. 2, to be sold to Halsey, Stuart & Co., the highest of 11 bidders, at 101.02, giving an average annual cost to the carrier of approximately 4.337 per cent. The equipment includes 15 steam locomotives, 5 electric locomotives, 2,679 freight train cars and 45 passenger train cars, having a total approximate cost of \$6,085,451.

The offering of these securities to the public was reported in the *Railway Age* of December 3.

SAN DIEGO & ARIZONA.—*Renews Notes.*—This company has been authorized by the Interstate Commerce Commission to issue promissory notes aggregating \$527,823 from time to time to June 21, 1928, in renewal of outstanding notes of like amount.

TEXAS-NEW MEXICO.—*Receives Charter.*—The board of directors of this company, which has been granted a charter by the attorney general of Texas for the construction of a railroad north from Monahans, Tex., to the New Mexico boundary, 35 miles, is made up of G. O. Bateman of Breckenridge, Tex., as president, and the following officers of the Texas & Pacific: R. S. Shapard, assistant general attorney; R. L. W. Thompson, assistant attorney; A. C. Littlejohn, chief clerk to the president; A. R. Dieterman, chief clerk to the vice-president; L. C. Porter, assistant general claim agent; L. T. McIntyre, cashier; D. Wallace, chief clerk to the assistant general manager.

Average Price of Stocks and of Bonds

	Last Dec. 6	Last week	Last year
Average price of 20 representative railway stocks..	121.78	120.66	100.74
Average price of 20 representative railway bonds..	97.29	97.05	92.07

Dividends Declared

Buffalo & Susquehanna.—Preferred, 2 per cent, payable December 30 to holders of record December 15.
Chesapeake & Ohio.—Common, 2½ per cent, quarterly, payable January 1, 1928, to holders of record December 12. Preferred, 3¼ per cent, payable January 2, 1928, to holders of record December 8.
Colorado & Southern.—Common, 3 per cent, annually; first preferred, 2 per cent, semi-annually; second preferred, 4 per cent, annually, all payable December 31 to holders of record December 17.
Erie & Pittsburgh.—\$.87½, quarterly, payable December 10 to holders of record November 30.
Old Colony.—1¼ per cent, quarterly, payable January 2, 1928, to holders of record December 10.
St. Louis-San Francisco.—Common, 1¾ per cent, quarterly; common, ¾ per cent, extra, both payable January 3, 1928, to holders of record December 9.
St. Louis Southwestern.—Preferred, 1¼ per cent, quarterly, payable December 31 to holders of record December 4.
Wabash.—Preferred B, 5 per cent, annually, payable February 6, 1928, to holders of record December 5.

Officers

Executive

Charles E. Johnston, vice-president and general manager of the Kansas City Southern, with headquarters at Kansas City, Mo., has been recommended by the road's executive committee for the position of president to succeed **J. A. Edson**, who will retire on January 1.

Charles E. Smith has been appointed vice-president of the New York, New Haven & Hartford, with headquarters at New Haven, Conn. He will assist the president in problems relating to improvements, construction, operation and other matters that may be assigned. Mr. Smith was born in Somerville, Mass., in



C. E. Smith

1877. He graduated from the Somerville High School in 1895 and from the Massachusetts Institute of Technology in 1900. His first engineering work was in the summer of 1897 on the New York & New England (now a part of the New York, New Haven & Hartford) at Boston. From 1900 until 1903, Mr. Smith served in the bridge engineering department of the New York, New Haven & Hartford. For several years thereafter he was employed in departments of the United States government and later served as assistant bridge engineer of the Lake Shore & Michigan Southern (now a part of the New York Central), with headquarters at Cleveland, O. From 1907 until 1915, Mr. Smith was in the service of the Missouri Pacific at St. Louis, a part of that period as chief engineer in charge of maintenance and construction. Subsequently under the firm name of C. E. Smith & Co., he has been a consulting adviser to numerous railroads, city administrations, public utilities, industrial companies, and for the last twelve and a half years consulting engineer and technical adviser to the city administrations of St. Louis on railroad and public utilities matters. In 1918, during the war, Mr. Smith was a major

in the construction division of the United States Army. During 1927 he made an exhaustive study and report on the New York City transit situation for the comptroller of that city. While he was consulting engineer in St. Louis, he also investigated and reported the union station situation and transit problems at New Orleans and joint railway situations at Fort Worth and other points, and, as chairman of a joint committee, made a study of, report on, and recommendation in regard to the railroad situation in the St. Louis terminal area.

George H. Foster, acting vice-president of the Lehigh Valley, with headquarters at New York, has been elected vice-president in charge of operation with the same headquarters, succeeding **F. L. Blendinger**, who has resigned on account of ill health. **R. W. Barrett**, general counsel, with headquarters at New York, has been elected vice-president and general counsel with the same headquarters.

Harry E. Pence, president of the Minneapolis, Northfield & Southern, with headquarters at Minneapolis, Minn., has in addition been elected president of the Minnesota Western and the Electric Short Line Terminal Company, succeeding **W. L. Luce** and following the purchase of the two railroads on November 30. **W. R. Stephens**, assistant to the president and secretary of the Minneapolis, Northfield & Southern, has also been elected vice-president of the two companies succeeding **E. D. Luce**, and **F. C. Bahr** has been elected secretary and treasurer, Minnesota Western.

Financial, Legal and Accounting

Thomas W. Mathews, who has been elected treasurer of the Seaboard Air Line, with headquarters at Portsmouth, Va., was born on November 7, 1882, at



T. W. Mathews

Savannah, Ga. He attended the University of Florida from 1896 until 1899, and entered the service of the Florida Central & Peninsular (part of the Seaboard Air Line) on March 1, 1899. He served as secretary to the comptroller until December, 1903, and then as in-

surance clerk until April, 1909. Mr. Mathews then became chief clerk, which position he held until February, 1913, when he was appointed assistant comptroller, occupying this position until August, 1918. He served as federal treasurer until March, 1920, and then became assistant treasurer and assistant secretary, which positions he was holding at the time of his recent election as treasurer.

Joseph Rosch, supreme court justice of Liberty, Sullivan county, N. Y., has resigned to become counsel for the Delaware & Hudson, with headquarters at Albany, N. Y.

Operating

M. J. Ruland has been appointed trainmaster of the Utah.

C. M. Lanham has been appointed assistant trainmaster of the Georgia division of the Seaboard Air Line, with headquarters at Atlanta, Ga.

R. R. Cummins has been appointed superintendent of the Savannah division of the Central of Georgia, with headquarters at Savannah, Ga., succeeding **J. Reichert**, deceased.

F. C. Smith, assistant division superintendent on the Southern Pacific at Ogden, Utah, has been appointed superintendent of the Ogden Union Railway & Depot Company, with headquarters at the same point, succeeding **G. W. Kellogg**, acting superintendent, who has been assigned to other duties.

W. A. Shockley, acting passenger trainmaster on the Atchison, Topeka & Santa Fe at Kansas City, Mo., has been appointed passenger trainmaster at the Union station at that point. **Howard N. Sails**, acting night trainmaster at Argentine, Kan., has been appointed assistant trainmaster, with headquarters at that point.

Fred M. Wooddall, superintendent of terminals of the Louisville & Nashville and superintendent of the Atlanta Joint Terminals, with headquarters at Atlanta, Ga., has been transferred to Louisville, Ky., to succeed **John B. Arbogust**, who voluntarily retired from active duty on December 1 after 46 years spent in the service of the L. & N. Mr. Arbogust was born on October 31, 1860 at Louisville, Ky., and was graduated from the Louisville Law School in 1881. He entered railway service immediately thereafter as a timekeeper on the L. & N., remaining in that position until 1887 when he became secretary and chief clerk to the superintendent of the Louisville, Cincinnati & Lexington division. In 1890 Mr. Arbogust was appointed chief clerk to the superintendent of terminals and 13 years later he was promoted to trainmaster. He was advanced to superintendent of terminals in 1908, with headquarters at Louisville, a position he has held since that time with the exception of the period during fed-

eral control from August, 1918, to March 1, 1920, when he served as terminal manager at Louisville.

J. H. Cooper, engineer maintenance of way of the Southern division of the Eastern region of the Pennsylvania, with headquarters at Wilmington, Del., has been appointed superintendent of the Schuylkill division, with headquarters at Reading, Pa., succeeding **F. L. Dobson**, promoted. Mr. Cooper was born on July 5, 1883, at Easton, Pa., and was graduated from Lafayette College in 1905. He entered the service of the Pennsylvania on October 13, 1905, as a rodman on the Sunbury division and was transferred to the Williamsport division on March 9, 1910. On August 11 of that year he was advanced to transitman in the general office at Philadelphia and on January 1, 1911, became assistant supervisor on the Tyrone division, being transferred successively to the Conemaugh, the Philadelphia and the Philadelphia terminal divisions. He was advanced to supervisor on the Trenton division on October 25, 1917, and was transferred to the New York division



J. H. Cooper

on March 1, 1920. Mr. Cooper was appointed division engineer of the Philadelphia division on November 1, 1923, and on January 1, 1926, was transferred to the Monongahela division. On April 1 of the same year he was transferred to the Philadelphia terminal division, with headquarters at West Philadelphia. In July, 1927, Mr. Cooper was appointed engineer maintenance of way of the Southern division, which position he was holding at the time of his recent appointment as superintendent of the Schuylkill division.

Traffic

L. A. Burritt, assistant general Eastern freight agent of the Erie, with headquarters in the Produce Exchange Building, 2 Broadway, N. Y., has been appointed assistant to general freight agent, with headquarters at 71 W. 23rd street, N. Y. He will be succeeded by **W. H. Stadelman** as assistant general Eastern freight agent. **L. R. Knapp** has been appointed general agent, with headquarters

at Newark, N. J., succeeding **H. B. R. Potter**, deceased.

Clarence C. Howard, who has been appointed passenger traffic manager of the Erie, with headquarters at New York, entered railway service as a messenger on the New York & Northern (now a division of the New York Central). He served as traffic agent, telegraph operator, ticket agent, traveling auditor and train dispatcher, and in 1897 entered the passenger rate department of the New York Central. He then served succes-



C. C. Howard

sively for several years as rate clerk, chief rate clerk, chief clerk, assistant general passenger agent and general passenger agent of the New York Central's West Shore road. In 1918 Mr. Howard became associated with the Irving National Bank, now the American Exchange Irving Trust Company, as assistant cashier and two years later was advanced to vice-president, which position he was holding at the time of his recent appointment as passenger traffic manager of the Erie.

Frederick D. Claggett, who has been appointed freight traffic manager of the Southern, with headquarters at Washington, D. C., was born on August 14, 1874, at Hagerstown, Md. He entered railway service in September, 1891, in the auditor's office of the Norfolk & Western at Roanoke, Va. From November, 1895, until March 1, 1897, he served in the general freight office of the Southern at Washington, D. C., and from the latter date until June 1, 1912, served in the office of the general freight agent of the Cincinnati, New Orleans & Texas Pacific (part of the Southern) at Cincinnati, O. On June 1, 1912, Mr. Claggett became assistant general freight agent of the same road at the same place, which position he held until May 1, 1917, when he was appointed general freight agent of the Southern lines west, at Cincinnati, O. He served in this position until March 1, 1918, and was then transferred in the same capacity to the lines east at Atlanta, Ga. On April 1, 1918, Mr. Claggett was appointed assistant freight traffic manager of the Southern at Washington, D. C., which position he

held until the latter part of 1925, when he was appointed assistant to vice-president. This position he was holding at the time of his recent appointment as freight traffic manager.

Mechanical

John. H. Minette, assistant general foreman at the West Springfield shops of the Boston & Albany, has been appointed general foreman of the locomotive shops, with headquarters at West Springfield, Mass., succeeding **Joseph W. Murphy**, deceased.

Frank W. Johnson has been appointed traveling engineer of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., succeeding **Grant W. Stanton**, transferred. **Milo P. Lybeck**, assistant fuel supervisor, with headquarters at Enderlin, N. D., has been appointed traveling engineer of the Stevens Point division, with headquarters at Stevens Point, Wis., succeeding **Charles F. Gillaspay**, resigned.

Engineering, Maintenance of Way and Signaling

L. A. Guthrie, signal supervisor on the Manitoba district of the Canadian National, with headquarters at Winnipeg, Man., has been appointed acting signal engineer of the Western region, with headquarters at the same point.

G. Tornes, chief carpenter of the Dubuque division of the Chicago, Milwaukee & St. Paul, with headquarters at Dubuque, Iowa, has been promoted to general supervisor of buildings, with headquarters at Chicago, succeeding **N. H. LaFountain**, deceased.

R. R. Metheany, division engineer on the Eastern region of the Pennsylvania, with headquarters at Altoona, Pa., has been appointed engineer maintenance of way of the Southern division of the Eastern region, with headquarters at Wilmington, Del., succeeding **J. H. Cooper**, promoted.

Purchases and Stores

W. N. Strong has been appointed storekeeper of the Chesapeake & Ohio, with headquarters at Cane Fork, W. Va., succeeding **J. R. Grey**, deceased.

Frank E. Cragin has been appointed general storekeeper of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., succeeding **J. H. Cragin**, deceased.

Obituary

W. F. Naumann, division storekeeper of the Illinois Central, with headquarters at East St. Louis, Ill., died in that city on October 28.

A. J. Archer, general agent for the Great Northern at San Francisco, Cal., died at a hospital in that city on December 2 following an operation.

J. H. Cragin, general storekeeper of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., died in that city on November 28.

Silvas De Wolf, vice-president and general manager of the Texas-Mexican, died at his home in Laredo, Tex., on December 3. The cause of his death was heart disease.

H. E. Ferree, freight claim agent of the Chicago, Rock Island & Gulf, with headquarters at Fort Worth, Tex., died in a hospital at Rochester, Minn., on November 8 following an operation.

D. F. Milne, general superintendent of the Clover Leaf district of the New York, Chicago & St. Louis, with headquarters at Frankfort, Ind., died at his home in that city on December 2 from an attack of acute indigestion.

Henry M. Fickinger, former vice-president and general manager of the Fort Worth & Rio Grande and the St. Louis, San Francisco & Texas, who retired from active railroad service in 1906, died at the Boulder Club, Boulder, Colo., on December 2 at the age of 79 years.

W. H. Hutchison, general agent for the St. Louis-San Francisco at Vinita, Okla., died at the Frisco hospital at St. Louis, Mo., on November 7. **Mr. Hutchison**, who was 55 years of age, had been general agent at Vinita since 1915. Prior to that time he was for two years assistant superintendent of the Frisco at Sapulpa, Okla.

Jacob Reichert, superintendent of the Savannah division of the Central of Georgia, with headquarters at Savannah, Ga., who was killed on November 24, when a freight train struck a rail motor car in which he was riding, was born on October 12, 1873, in Germany. He entered railway service in November, 1893, with the Central of Georgia as a brakeman on the Columbus division. In November, 1895, he was advanced to conductor and was later assigned duties in the Columbus yard, serving as yard foreman, night yardmaster and again as conductor on the Birmingham line of the Columbus division. Early in 1906 he was appointed yardmaster and station master at Albany, Ga., where he served until June, 1907, when he returned to the Columbus division as freight and passenger conductor. In June, 1917, he was appointed trainmaster of the Savannah terminals, serving there until December, 1919, when he was appointed superintendent of the Macon freight terminals. On October 16, 1925, he became superintendent of the Savannah division, which position he was holding at the time of his death.

Daniel Cameron Macdonald, assistant general claim agent of the Canadian Pacific, with headquarters at Winnipeg, Man., who died on November 24, was born on February 9, 1874, at Elmsdale, N. S., and educated in the public schools of the province of Nova Scotia. **Mr. Macdonald** entered railway service at the age of 16 as a relieving operator on the

Intercolonial (now a part of the Canadian National), for the next eight years occupying that position and the position of agent at Dartmouth, N. S., and freight agent at Halifax, N. S. In October, 1899, he volunteered for the Transvaal war and went overseas to South Africa with the First Canadian Contingent of the Canadian Expeditionary Forces. On his return from South Africa **Mr. Macdonald** was appointed freight agent of the Intercolonial at Sydney, N. S., and in July, 1902, he was transferred to Halifax where he remained until 1905 when he entered the general freight department of the Canadian Pacific at Winnipeg. In the following year **Mr. Macdonald** was appointed traveling freight agent and in December, 1906, he was appointed chief clerk of the general freight department at Winnipeg. He was promoted to city freight agent at Winnipeg in April, 1907, being further promoted to division freight agent at Regina in June, 1911. **Mr. Macdonald** was promoted to assistant general claim agent, with headquarters at Winnipeg, on January 1, 1914, a position he held continuously until the time of his death.

William A. Patton, who retired as assistant to the president of the Pennsylvania on November 1, 1919, died on December 6 at his home in Radnor, Pa., from heart failure. **Mr. Patton** was born at Union Furnace, Pa., on October 21, 1849. He was educated in the public school and high school of Altoona, Pa., and entered the service of the Pennsylvania in the office of the general superintendent at Altoona on January 11, 1865. In 1871 he was transferred to Philadelphia, and in August, 1872, was appointed chief clerk to the general manager. On October 1, 1882, **Mr. Patton** was assigned to duties in the office of the president, and on April 1, 1884, was appointed general assistant in the office of the president. On February 10, 1897, he became assistant to the president, which position he was holding at the time of his retirement. **Mr. Patton** had a prominent part in the promotion and development of the New York, Philadelphia & Norfolk, now a part of the Pennsylvania System. On May 24, 1884, he became vice-president of this company and in June, 1899, became president, remaining in this position until the road was, for operating purposes, incorporated with the Southern division of the Pennsylvania on June 16, 1917. He was identified with the agricultural and commercial development of the "Eastern Shore," now a part of the Pennsylvania, and was also active in the promotion and construction of the Norfolk & Portsmouth Belt Line and served as president of that company for 17 years. **Mr. Patton** was also general chairman of the Young Men's Christian Association on the Pennsylvania for 19 years. He was a director of the Young Men's Christian Association's General Board for Philadelphia and a member of the International Committee of Young Men's Christian Associations of North America. He was a director in 20 corporations in the Pennsylvania System.